SUMMIT
ENVIRONMENTAL CONSULTANTS, INC.

LIMITED PHASE I
ENVIRONMENTAL SITE ASSESSMENT
MITCHELL FIELD
ROUTE 123
HARPSWELL, MAINE

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EXECUTIVE SUMMARY

Summit Environmental Consultants, Inc. (Summit) completed a limited Phase I Environmental Site Assessment (ESA) on the property known as Mitchell Field (the Site) located on Route 123 in Harpswell, Maine. The scope of work associated with the completion of this Phase I was established by the Maine Department of Environmental Protection (MEDEP) prior to the commencement of this project. This ESA does not comply with ASTM Standard Practice E1527-05. The primary objective of the ESA was to summarize activities that have occurred at the site and identify data gaps based on changing the risk scenario for proposed reuse of the site. Remedial activities performed at the Site to cleanup the contaminated soil were completed with the approval of MEDEP for the risk based at the Trespasser level, however the Town of Harpswell's plans for redevelopment may include MEDEP residential or worker scenarios.

This assessment included a site walkover and inspection, a visual reconnaissance of surrounding properties, a review of subject property and area history, and a file review of applicable local, state, and federal regulatory records and databases as well as previous site assessments conducted on the Site. Analytical testing and subsurface investigation of soil and groundwater were not within the scope of this ESA.

The Site is located on the western side of Route 123 (Harpswell Neck Road) in Harpswell, Maine and is designated as Lots 3 and 4 on the Town of Harpswell Tax Assessor's Map 13. The Site encompasses approximately 117 acres of land and was formerly the United States Navy Defense Fuel Support Point, which was in operation as a military fuel storage facility from 1952 to 1991. Past owners of the Site include Defense Fuel Supply Center (DFSC), DFSC contractors, TENCO Services, and Continental Services Corporation. The current owner of the Site is the Town of Harpswell.

Fourteen aboveground storage tanks (ASTs) including eight, 80,000-barrel (3,360,000-gallon) tanks and six 50,000-barrel (2,100,000-gallon) tanks containing Jet Fuel (JP-5), Diesel Fuel-Marine (DFM and DF-2), and aviation gasoline (AV-gas) were once located on the northern and eastern portions of the Site. The ASTs were dismantled and removed along with the associated pipelines during the time period of April 11, 1996 to July 12, 1996. The removal project included the excavation of petroleum-saturated soils and an oiled sand layer found beneath each of the ASTs. Excavated soils were treated on-site using a cold-mix asphalt recycling method and then reused as paving material for on-site roadways. Approximately 9,145 tons of petroleum-impacted material was recycled using this method. Laboratory analysis performed for total petroleum hydrocarbons (TPH) on the resulting recycled material indicated that TPH was not detected in any of the samples. Additional excavation was conducted in 1998 after a clean-up guideline of 870 milligrams per kilogram (mg/kg) for Diesel Range Organics (DRO) had been negotiated with MEDEP. The excavation was extended horizontally until confirmatory samples indicated contamination levels were below the established clean-up guideline and vertically to a depth of eight feet BGS or until bedrock was encountered. Excavated soil was stockpiled onsite before treatment on-site using Low Temperature Thermal Desorption (LTTD).

Between August 27, 1998 and November 7, 1998, 53,926.29 tons of petroleum-impacted soil was treated at the Site using LTTD.

A discrepancy exists in the number of undergrounds storage tanks (USTs) reported to have been present at the Site. Documents reviewed indicated either fourteen or fifteen USTs were formerly present at the Site, but all have been removed. The USTs ranged in capacity from 1,000 to 10,000 gallons, and were used to store #2 fuel oil, diesel fuel, and waste oil. The details of a fifteenth tank, documented in UST File #6452 and Spill File P-677-1991, are limited, and only document that it was a 1,000-gallon tank and that it has been removed. Since neither the tank's location nor what remedial actions (if any) were taken upon its removal are known, this represents an unresolved environmental condition at the Site. For a complete summary of Site USTs, refer to Table 3.

Remediation of petroleum contamination in the Main Gate area on the eastern portion of the Site was performed independently of major site remediation work due to the proximity of residential wells. A remediation standard of 30 mg/kg Total Petroleum Hydrocarbons (TPH) was established for the Main Gate area. 8,287 tons of petroleum-impacted material was excavated and transported off-site for treatment. Levels of contamination identified in confirmatory samples taken from the walls of the excavation exceeded the established clean-up guideline in three locations, but excavation was discontinued due to the presence of roadways and structures. As a result, soil impacted above the established threshold may still exist in this area.

Twenty-two structures once existed on the Site, but seven were demolished as a part of remedial activities at the Site. Prior to demolition, buildings were surveyed for the presence of asbestos-containing materials (ACM) and lead-based paint (LBP). Abatement was performed for identified LBP and ACM prior to demolition. Additional Site improvements include a water tower and a drilled water supply well located in the upper tank farm area (southern portion of Site).

The southern and western portions of the Site have remained undeveloped, with the exception of a landfill approximately three acres in size on the southern border of the Site. Records indicate that the landfill was utilized for the disposal of stumps, rocks, scrap metal, steel cables, wooden boards, rusted (empty) drums, and small amounts of incinerator ash and material classified as sludge from AST bottoms until the mid 1970s. The landfill was formerly closed in accordance with appropriate regulations in November 1997.

Summit identified seven spills occurring at the Site. Spill files reviewed indicated that MEDEP was satisfied with the remedial efforts that took place with the exception of the following spill:

- P-677-1991 – As a portion of a UST removal that began in November 1991, MEDEP performed a site visit in February 1992. MEDEP personnel observed an oily sheen on the water in the new well where UST #9 was located. MEDEP recommended further investigation into this issue, but no further documentation of an investigation or remedial actions on the part of MEDEP or the Owner were included in the file.

Based on the activities conducted during this limited Phase I ESA a review the record of investigations and remedial activities that have occurred at the site and to identify potential data gaps based on changing the risk based scenario for reuse of the site, Summit identified the following areas of concern that warrant further investigation and/or remediation:

- Petroleum Contaminated Soils: Petroleum contaminated soils were located throughout the site where ASTs and USTs were located as well as in areas where spills occurred. Contaminated soils were cleaned up to a trespassers risk scenario in the late 1990s. The Town of Harpswell currently plans to redevelop the site and is considering all reuse scenarios including worker and residential. An evaluation of current soil contamination levels at the Site should be conducted to provide up-to-date information to assist with redevelopment plans. Evaluation should include:

- The Main Gate area: A clean up guideline of 30 mg/kg for petroleum impacted soils was established for the Main Gate area, however, records indicate that due to the presence of roadways and structures in the vicinity of the excavation, not all soil impacted above the established clean-up guideline could be removed. The 30 mg/kg threshold was established assuming future uses of the Main Gate Area would be recreational or light commercial. Given the Town of Harpswell's plans to redevelop this portion of the Site as low-income housing, additional investigation to determine current levels and extent of contamination in soils is warranted. Depending on the findings of this investigation, additional soil removal may be necessary.

- Upper and Lower Tank Farm areas and Former Drum Storage area: Excavation and removal of soil from these areas was based on an extensive program of test pits and soil borings that determined where the soils most heavily impacted by petroleum-related contaminants were located. Although soils impacted above the 870 mg/kg Deisel Range Organics (DRO) threshold may exist on the Site, records indicate that soil removal was completed to the satisfaction of MEDEP and may be considered complete. However, if a new risk scenario is adopted for the Site, it may warrant further investigation and/or remediation in these areas.

- Landfill Area: Petroleum contaminated soil was reportedly disposed of within the closed landfill. Records of past groundwater sampling around the landfill have not included DRO sampling. Therefore the possibility exists that soil impacted above the established clean-up guideline of 870 mg/kg of DRO is present in this area. Groundwater samples for the presence of DRO should be collected from existing monitoring wells in this area.

- Naval Housing Units: Recent analysis of soil samples, taken in the area of the naval housing units, using an X-Ray Fluorescence (XRF) analyzer reported concentrations of lead in the soils adjacent to the buildings, ranging from 239 parts per million (ppm) to 2140 ppm. The proposed use of these buildings is for low-income residential property. Therefore, an additional investigation should be conducted to delineate the area of contaminated soil and soil exceeding the remedial action guideline for a residential scenario should be removed from the site for disposal at an appropriate facility.

- The Water Supply Well: The MEDEP has approved use of an onsite water supply well for 450 gallons a day. The relatively low volume approved was based on a pumping test with limited data points. Given the widespread petroleum contamination onsite this well is located in the area of the site least likely to become contaminated. Therefore, it is expected that this well will have to supply water to the entire 117-acre site. Increasing the allowable use of this water supply is essential to redevelopment of the site. It is

recommended that further investigation be conducted to determine if the volume of allowable water use can be increased without impact from onsite contamination.

- 1,000-gallon UST: Records reviewed for this report identify either 14 or 15 USTs were present on-site. Although records indicate that all USTs have been removed from the Site, the former location of the fifteenth tank and remedial actions (if any) that took place during its removal are unknown.

TABLE OF CONTENTS

LIMITED PHASE I
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1.0 INTRODUCTION

This Report describes the limited Phase I Environmental Site Assessment (ESA) performed by Summit Environmental Consultants, Inc. (Summit) on the property known as Mitchell Field. The Site encompasses approximately 117 acres of land and is located on the west side of Route 123 in Harpswell, Maine. Summit performed this work at the request of Ms. Jean Firth of the Maine Department of Environmental Protection (MEDEP) (the client), who authorized this project on June 30, 2006.

1.1 PURPOSE

The purpose of the Phase I ESA, as directed by the client, was to provide a summary of the investigations and remedial activities that have occurred at the site and to identify any data gaps that may exist based on changing the risk scenario on which the cleanup of the site was based.

1.2 DETAILED SCOPE OF SERVICES

This report does not comply with ASTM Standard Practice E1527-05. Summit performed the following activities in accordance with the objectives of this investigation:

1) Conducted a database search of government environmental records on June 28, 2006.
2) Reviewed applicable State records on file at the Maine Department of Environmental Protection (MEDEP) on July 5 and 6, 2006 to research investigations and remedial activities that have occurred at the site.
3) Conducted a Site visit on July 13, 2006 to observe environmental conditions at the Site.
4) Reviewed local records on file at the Town of Harpswell municipal offices on July 13, 2006 to ascertain Site history.
5) Reviewed aerial photographs of the Site and vicinity obtained from the Maine Geological Survey on August 3, 2006.

1.3 SIGNIFICANT ASSUMPTIONS

Summit did not make significant assumptions while conducting the Phase I ESA on the Site.

1.4 LIMITATIONS AND EXCEPTIONS

This report has been prepared for the exclusive use of the MEDEP Brownfields Program, (Ms. Jean Firth) (the Client), and the Town of Harpswell, and should not be reproduced or disseminated without the written approval of Summit or the Client. Summit has retained a copy of this report. No additions or deletions are authorized without the written consent of Summit. Use of this report in whole or in part by parties other than the Client or his/her authorized agent is prohibited. As requested by the Client, this assessment was limited to review of existing

conditions, historical operations, and identification of data gaps from past environmental investigations.

1.5 USER RELIANCE

The recommendations and conclusions discussed herein are based solely and in reliance upon information collected as a result of the activities delineated above in the Scope of Services. Summit neither attests nor renders an opinion as to the accuracy or comprehensiveness of the statements of the individuals interviewed, available governmental records, environmental reports conducted by other consultants, analytical results, or the database search results provided by the database contractor. The conclusions contained within this report remain valid for 180 days from the date of the report, assuming conditions at the Site remain unchanged.

2.0 SITE REVIEW

2.1 SITE HISTORY AND DESCRIPTION

The Site is a 117-acre parcel located on Route 123 in Harpswell, Maine and is identified as Lots 3 and 4 on the Town of Harpswell Tax Assessor's Map 13. A legal description of the Site is on file at the Cumberland County Registry of Deeds in Portland, Maine in Book 16872, Page 236 (Lot 4) and in Book 23160, Page 230 (Lot 3). The Town of Harpswell is the current owner of the Site. Refer to Figure 1 for a Site location map and Figure 2 for a Site Plan.

2.1.1 Site History

Prior to development the Site was primarily forested, with a few seasonal camping areas and permanent residences. The Site was commissioned as an oil terminal by the United States Navy in 1952. After two years of construction, operations began at the Site in 1954. The facility included fourteen ASTs (numbered 1 through 14) used to store fuel and a 12-mile underground pipeline that connected the facility to Brunswick Naval Air Force Base. A pier consisting of an 800-foot earth/concrete causeway that extends to a 400-foot by 50-foot dock situated perpendicular to the causeway enabled tankers to access the Site for fuel delivery. Fuel was transferred to BNAS via two pipelines, one eight inches and one twelve inches in diameter. The pipelines connected to the Site via Pump House #172, located between the Upper and Lower Tank Farms. The ASTs on the Site were connected to Pump House #172 by a network of underground pipelines that were removed in 1996.

2.1.1.1 Aboveground Storage Tanks

Six 2,100,000-gallon ASTs (numbered 1 through 6) were located, each within its own berm, on the northern portion of the Site adjacent to the pier. This area is identified as the Lower Tank Farm. Eight 3,360,000-gallon ASTs (numbered 7 through 14) were located, each within its own berm, on the eastern portion of the Site adjacent to the Main Gate Area. This area is known as the Upper Tank Farm. Refer to Figure 2 for a Site Plan depicting the layout of ASTs on the property.

Tanks located in the Lower Tank Farm primarily stored Marine Diesel Fuel (DF-M), but also stored Diesel Fuel (DF-2) during the period 1982 to 1987 and periodically stored aviation gasoline during the period 1954 to 1971. Tanks in the Upper Tank Farm were used to store Jet

Propulsion Fuel (JP-5). Tanks 4, 9, 13 and 14 were taken out of service in 1987 due to bottom failures. At the time of a report compiled by O'Brien & Gere in 1991, tanks 1, 2, 3, 5, 6, 11 and 12 stored JP-5 and remaining tanks were out of service. A 300-gallon AST containing Fuel System Icing Inhibitor (FSII) was once located behind Pump House #172, between the Upper and Lower Tank Farms.

The ASTs were dismantled and removed along with their associated pipelines during the time period of April 11, 1996 to July 12, 1996. The removal project included the excavation of petroleum-saturated soils and an oiled-sand layer found beneath each of the ASTs. Prior to removal, a composite sample was taken from the oiled-sand layer beneath each AST and analyzed to determine if the material exhibited RCRA waste characteristics. Sample results indicated that it did not exhibit RCRA waste characteristics, so material from the oiled-sand layer was stockpiled on-site prior to treatment.

A gravel fill layer was discovered underneath the oiled-sand layer ranging in thickness from 1 to 2.5 feet. A composite sample was taken from each gravel fill layer and analyzed for the presence of fuel oil. Samples showed concentrations ranging from below the method quantitation limit to 6,200 ppm. The gravel fill was not removed for treatment.

Severely contaminated soils were tested using a "field jar shake" test to determine if they were petroleum-saturated. Soil deemed saturated was excavated and stockpiled on-site. Excavated soils were treated on-site using a cold-mix asphalt recycling method and then reused as paving material for on-site roadways. Approximately 9,145 tons of petroleum-impacted material was recycled using this method. Laboratory analysis performed for total petroleum hydrocarbons (TPH) on the resulting recycled material indicated that TPH was not detected in any of the recycled material samples.

Remediation activities also included the removal of five oil/water separators and three recovery wells located in the Lower Tank Farm area from the Site.

Additional excavation of contaminated soils was conducted in 1998 after a clean-up guideline of 870 milligrams per kilogram (mg/kg) for Diesel Range Organics (DRO) had been established by the MEDEP. An environmental assessment that included an extensive program of test pits and soil borings was completed prior to excavation that determined what areas required additional excavation. Excavated areas were extended horizontally until confirmatory field screening readings indicated contamination levels were below the established clean-up guideline and vertically to a depth of eight feet BGS or bedrock was encountered. Confirmatory samples were taken every 30 linear feet along excavation walls and every 900 square feet within excavation floors in accordance with established MEDEP protocol. Samples were submitted for laboratory analysis for the presence of DRO in all excavations and for the presence of GRO in the Former Drum Storage area. In areas where the 870 mg/kg threshold was exceeded, the above process was repeated.

Excavated soil was stockpiled on-site before treatment on-site using Low Temperature Thermal Desorption (LTTD). Between August 27, 1998 and November 7, 1998, 53,926.29 tons of petroleum-impacted soil was treated at the Site using LTTD. Treated soil was backfilled into excavated areas on-site.

2.1.1.2 Main Gate Area

Remediation of the Main Gate area involved the removal of petroleum-contaminated soils impacted above the MEDEP-established threshold 30 mg/kg as well as the excavation and removal of a septic system found to be within the area of contamination. Remediation was prompted by the detection of benzene in a nearby residential water supply well. The clean-up guideline was chosen under the assumption that future use of the Main Gate Area would be recreational and/or light commercial. Excavation was discontinued before the horizontal extent of contamination was reached, as it would have compromised Site roadways and Former Well House #166. Two confirmatory samples for DRO and one sample for gasoline range organics (GRO) were taken from walls of the excavation and reported petroleum-related contaminants above the established clean-up guideline of 30 mg/kg. These samples ranged from 41 ppm DRO to 150 ppm DRO and 57 ppm GRO. Samples from test pits dug on the opposite side of Site roadways from the excavation reported no petroleum impacts. Remediation of the Main Gate area was performed in June-July 1997.

2.1.1.3 Landfill

A landfill, approximately three acres in size, is located on the southwestern border of the Site. Test-pitting, conducted as part of the formal closure of the landfill, revealed the following types of solid waste/debris in the landfill: stumps and logs, concrete rubble, bricks, wooden boards, scrap metal, steel cables, small containers, rusted (empty) drums, small amounts of incinerator ash and sludge from AST bottoms. Dumping occurred at the landfill until sometime in the late 1970s to early 1980s. The landfill was closed in accordance with appropriate regulations in November 1997. Monitoring wells in the vicinity of the landfill are routinely sampled as part of a regular water level and quality monitoring program. Records of past groundwater sampling around the landfill have not included DRO sampling, despite the discovery of petroleum-impacted material (tank bottom sludge) in the landfill.

2.1.1.4 Site Structures

Twenty-two buildings were once located on-site, but currently only 15 remain. Seven structures associated with fuel transfer operations were demolished as part of remediation activities at the Site. Current Site buildings include:

Checker House #167 and Pier Pump House #175, located on the pier. Information regarding the historical uses of these buildings is unavailable, but previous reports have classified the Checker House as an area where "storage, release and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken."

Garage #158, Storage Building #130, Maintenance Building #129, and Administration Building #126, located in the Lower Tank Farm Area adjacent to the pier. These buildings have been used primarily for storage purposes. Records indicate the removal of small quantities of several miscellaneous petroleum products and hazardous substances from these buildings. Administrative Building #126 was initially used as an administration office and fire station, but more recently was used to store oil removal equipment such as booms, sorbent material, and an oil skimmer. Approximately 4,000 square feet of vinyl asbestos floor tile was removed from

this building as a part of Site remediation activities. Records indicate that Storage Building #130 was formerly used to store FSII. Six 5-gallon cans of DDT and 50 lbs of bleaching powder improperly stored in this building and Garage #158 were removed during major remediation activities at the Site. Approximately 150 square feet of asbestos-containing floor tile and roofing material was removed from Maintenance Building #129 during major Site remediation activities. According to a 2006 report, ACM is currently present in mechanical systems housed in Generator Building #159.

Foam House #200, located on the western side of the Upper Tank Farm. According to Robyn Saunders of GZA, this building was used primarily for storage purposes.

Water Tower Boiler Building #170, Wood-framed Building #171, Water Treatment Building #161, Sentry Building #164, and Naval Housing Units #162 and #163, located in the Main Gate Area. The Naval Housing Units were constructed in the 1940s and have been historically used for residential purposes. Records indicate that both units were occupied until Fall 2002 by Navy families. Lead Abatement was performed on both buildings in 2004, but recent samples from soils surrounding the units analyzed by XRF indicated lead contamination ranging from 239 parts per million (ppm) to 2140 ppm. The units are currently vacant. Information regarding the historical uses of the other buildings in the Main Gate Area is unavailable, but previous reports have classified them as areas where "storage, release and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken."

Seven structures were removed as a part of soil remediation activities in the Upper and Lower Tank Farms. These buildings were identified as Truck Rack Structure #181, Separator Building #180, Well House #166, Pump Houses #172, #173 and #174, and Oil/Valve Pit #177. Specific information regarding the historical uses of these buildings is unavailable. Abatement of ACM and LCM in Buildings #166, #181 and Separator Building #180 was performed prior to demolition.

2.1.1.5 Underground Storage Tanks

A discrepancy exists in the number of underground storage tanks (USTs) once located at the Site. Documents reviewed indicated either fourteen or fifteen USTs were formerly located at the Site, but all have been removed. USTs ranged in capacity from 1,000 to 10,000 gallons, and stored #2 fuel oil, diesel fuel, and waste oil. The details of a fifteenth tank, documented in UST File #6452 and Spill File P-677-1991, are unknown except that it was a 1,000-gallon tank and that it has been removed. The tank's location and remedial actions (if any) that were taken upon its removal are unknown. Refer to Table 4 for details regarding USTs formerly located on-site.

Since five USTs were removed prior to September 1991, UST assessments documenting contamination encountered during removal and corresponding remedial actions taken are not available. According to Spill Report P-677-1991, a total of 130 yards of contaminated soil was excavated and land-farmed on-site in association with the removal of nine USTs from the Site, including: 100 yards of contaminated soil from the UST #9/ Building #174 area; 20-30 yards of contaminated soil from the UST #11/Building #173 area; and approximately 5 yards of contaminated soil from the UST #4/Building #172 area. During a subsequent Site visit, MEDEP

personnel observed an oily sheen in the monitoring well installed where UST #9 was located. Further investigation was recommended, but no documentation of further investigation is included in the report.

2.1.1.6 Transformer Removal

Remediation activities at the Site included the removal of twelve PCB-containing transformers and six oil-filled switches from the Site on June 4, 1997. This included removal of three primary transformers from the Main Gate area, six secondary transformers from Water Treatment Building #161, three secondary transformers and six oil-filled switches from Generator Building #159. Records documenting PCB levels and contamination discovered during the removal of transformers were not discovered.

2.1.2 Site Description

The Site is bounded to the east by Route 123, to the west by Casco Bay, and to the north and south by privately held residential property. A chain-link, barbed-wire fence separates the Site from surrounding properties. The pier and the housing units associated with the Site lie outside of the fenced-in area. The pier consists of an 800-foot earth/concrete causeway that extends west into Casco Bay to a 400-foot by 50-foot dock situated perpendicular to the causeway. The housing units, known as Buildings #162 and #163, are two-story, wood-framed buildings with pitched asphalt-shingled roofs. Building #163 includes approximately 1,452 square-feet of usable space and Building 162 includes approximately 1,024 square-feet of usable space. According to Site Representative Mr. Jay Chace (Town of Harpswell), both houses are currently unoccupied. At the time of the Site reconnaissance the houses were both locked, preventing visual inspection of the interior of the buildings. A water tower, brick sentry building, water treatment building and wood-framed building #171 are also located in the main gate area of the Site.

The Site is improved with a series of paved roads that form a loop around the Upper and Lower Tank Farm areas and stretch from the Main Gate area to the pier. The Upper and Lower Tanks Farms, formerly the location of fourteen large ASTs, are currently undeveloped. Another roadway follows the southern border of the Site before joining with other roadways at the Main Gate Area. Site roadways are used primarily by pedestrians and bicyclists for recreational purposes.

Four buildings were observed in the former lower tank farm area on the northern portion of the Site. One of these buildings (storage building #130) has been partially demolished with only its metal frame and foundation remaining. Three other one-story, flat-roofed, brick buildings were observed on this portion of the Site, and are known as Administrative Building #126, Garage #158 and Maintenance Building #129. Doors to these buildings were locked, which prevented visual inspection of the interior of the buildings. Two structures are located on the pier: the Pier Pump House #175 and the Pier Checker House #167. Other Site buildings include the Foam House #200, located on the upper tank farm, and the Generator Building #159, located in between the upper an lower tank farms. According to a 2006 survey of Site buildings, some of these buildings are used for storage purposes by the Town of Harpswell.

A landfill was observed on the southern border of the Site. The landfill has been capped and no exposed solid waste or debris was observed in the landfill area. The landfill can be accessed by

a road that follows the perimeter of the Site, and has been graded to prevent accumulation of water and to facilitate drainage.

The Site's topography slopes to west towards Casco Bay. The Site is located on a peninsula of land, thus regional topography slopes east and west towards Casco Bay (Atlantic Ocean).

The Site is accessible via Route 123 (Harpswell Neck Road).

Refer to Appendix A for photographs of Site.

2.1.3 Conceptual Site Model

A conceptual site model includes an evaluation of suspected contaminant sources and receptors as well as a review of existing hydrogeologic data. Table 1 presents the potential source areas, potential contaminants of concern, potential migration and exposure pathways and exposure and potential receptors.

Site topography slopes westward from the Main Gate area to the Marine Pier. Casco Bay abuts the Site to the West and is the likely discharge point for shallow groundwater. Given the physical setting, and previous investigation results, it is expected that groundwater flow is generally westerly. Groundwater from the landfill area has been documented as flowing in a northeast direction towards an unnamed stream before emptying into Casco Bay. The Site and properties surrounding the Site are served by private drinking water wells. Pump tests conducted on the on-site Water Supply Well have indicated that the well can pump 450 gallons of water per day without drawdown of contaminants into the well's capture zone.

The utilization of the Site as a fuel storage facility has been documented to have adversely affected groundwater, soil, sediments and surface water on-site. Petroleum products stored in the fourteen ASTs once located on the Site include diesel fuel marine (DF-M), jet propulsion fuel (JP-5), diesel fuel (DF-2), and aviation gasoline (AV-gas). Other petroleum products stored in smaller quantities on the Site include #2 heating oil, fuel-system icing inhibitor (FSII), and waste oil.

As a result of the geologic setting and structure of the Site and information concerning past operations at the property, a conceptual model of the Site with the following considerations was developed:

- Operations at the Site included the storage and transfer of a number of petroleum products via an on-site pipeline and by tanker ships. Products primarily stored at the facility were DF-M, JP-5, DF-2 and AV-gas. Several spills have been documented at the Site in the 1980s and 1990s. Records prior to 1980 were not available for review.
- Previous reports documenting investigative and remedial activities at the Site have determined that areas of petroleum-related contamination extend vertically to the bedrock.
- ACM and LCM were present in buildings on-site prior to remedial activities in the mid 1990s. PCB-containing transformers were also present on-site until this time. Although lead and asbestos abatement have been performed, ACM and LCM may still be present on-site.
- Petroleum-impacted material (AST bottom sludge) was disposed of in the landfill on-site, but the landfill has not been tested for the presence of DRO.

Potential Source Areas – Several areas of contamination have been identified at the Site: The Upper and Lower Tank Farms, the Marine Pier, Locations of former Site USTs, the solid waste landfill located on the southern portion of the Site, an area identified as the Former Drum Storage Area on the western portion of the Site, and areas adjacent to Site buildings where ACM and lead-based paint (LBP) was and may still be present. Petroleum contaminant releases may have occurred in any of several ways: Spills associated with fuel transfer activities; leaks in pipelines and manifolds; tank bottom failures (documented in tanks 4,9, 10, 13 and 14); corrosion of drums stored on-site; corrosion of USTs, ASTs, and underground piping; and dumping of petroleum-contaminated sludge/soil in the Site landfill.

Lead and asbestos contamination may have occurred at the Site due to the deterioration and flaking of LBP and damaged and disturbed ACM floor tiles present on-site.

Based on the activities conducted during previous remediation activities at the Site, recognized environmental conditions and material threats of release associated with the Site were identified.

Site geology consists of glaciomarine sediments overlying glacial tills. Total overburden thickness ranges from zero where the Site borders Casco Bay to 25 feet at the Main Gate Area. Groundwater flow occurs primarily through shallow overburden and discharges to Casco Bay. Previous groundwater analytical results indicate impacts relating to petroleum contaminants. Impacts to soil and groundwater from petroleum-related contaminants pose the greatest environmental concern at the Site. Metals are not present at significant concentrations in subsurface soils.

Potential Contaminants of Concern – Petroleum compounds such as residual fuel oil or DRO, GRO and volatile organic compounds (VOCs).

Potential Migration Pathways –Includes particulates or dust from wind-blown soil or soil transported by surface water runoff, vapors from impacted groundwater, groundwater discharge to surface water, and ambient vapors from specific sources on the property.

Potential Exposure Pathways – Potential exposure routes include inhalation/ingestion and dermal contact of soil and sediments, ingestion of groundwater or surface water, and inhalation of vapors.

Potential Receptors – At present include site workers and area residents that may trespass on the property. This may change depending on what redevelopment options the Town of Harpswell pursues.

TABLE 1 : SITE CONCEPTUAL MODEL					
Potential Source Areas and Contaminants of Concern	**Migration Pathway**	**Potential Exposure Pathway**	**Potential Receptors**		
			Human		**Ecological**
			Future Site Workers	**Trespassers**	**Biological Receptors**
Petroleum-contaminated soils and sediments, groundwater and surface water. Residual effects of ACM and LBP in Site buildings and the potential that some may still be present on-site.	Soil Disturbance (Dust, Surface Runoff)	Inhalation/ Ingestion (Dust)	√	√	√
		Dermal Contact	√	√	√
	Groundwater	Inhalation (Vapor)	√	√	√
	Ambient Air	Inhalation	√	√	√
	Surface Water	Absorption, Inhalation, Ingestion		√	√

2.2 CURRENT USES OF ADJOINING PROPERTIES

Land use in the immediate vicinity of the subject property is comprised of a mixture of residential and light commercial. The owners of the abutting and nearby lots are summarized in Table 1 below. The current Town of Harpswell Assessor's Maps 13 and 14 show the locations of the adjoining lots.

TABLE 2: ADJOINING PROPERTIES			
Map	**Lot**	**Location**	**Owner/Use**
13	1	1426 Harpswell Neck Road	Harpswell Neck Fire Department
13	5	1406 Harpswell Neck Road	Knight Residence
13	7	1384 Harpswell Neck Road	Overall Residence
13	9	3 Farr Lane	Rooney CR, LLC
13	10	40 Farr Lane	Giansirucusa Residence
13	15	19 Birchmere Lane	Thompson Residence
14	62	1450 Harpswell Neck Road	Childs Residence
14	70	1472 Harpswell Neck Road	Sparks Residence
14	72	1444 Harpswell Neck Road	Perry Residence
14	74	1438 Harpswell Neck Road	Lemay Residence

2.3 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.3.1 Topography

According to the United States Geological Survey South Harpswell 7.5 Minute Topographic Quadrangle Map, dated 1997, the elevation of the Site rises from sea level at its western border to approximately 80 feet above mean sea level at its eastern (inland) border (Figure 1). Site topography slopes west towards Casco Bay. Regional topography slopes both east and west towards Casco Bay (Atlantic Ocean). Based upon area's topography and proximity of surface-water bodies, Summit infers groundwater flow to generally be westerly.

The Maine Drinking Water Program map (Appendix D) indicates that the Site is not located within a Significant Sand and Gravel Aquifer.

2.3.2 Geology

Summit did not observe bedrock outcrops at or in the vicinity of the Site. According to the "Bedrock Geology Map of Maine" (1985), the Site is underlain by interbedded pelite and sandstone. Previous assessments have determined bedrock at the Site as belonging to the Cape Elizabeth Formation: biotite-muscovite schist and granofels with minor garnet-quartz schist and a rusty-weathering unit of biotite-garnet staurolite schist and phyllite.

According to the "Surficial Geology Map of Maine" (1985), the Site is underlain by glacial till. Glacial till consists of a heterogeneous mixture of silt, clay, sand and minor amount of gravel. Previous assessments have determined the Site's surficial geology to consist of thin sequences of glaciomarine sediments overlying glacial tills. Glaciomarine sediments are located primarily in the central portion of the Site in topographically low-lying areas, whereas glacial tills are present on the Site's northern and southern border. Thickness of glacial till ranges from zero in parts of the Lower Tank Farm to approximately 60 feet thick on the southern border of the Site.

2.3.3 Surface Water

Casco Bay borders the Site to the west. Summit also observed drainage channels along the border of the road on-site. These are connected to catch basins located throughout the Upper and Lower Tank Farms. An unnamed stream is located in the central portion of the Site. Summit infers that this surface water discharges into Casco Bay.

2.3.4 Flood Zone

The Federal Emergency Management Agency Flood Insurance Rate Map, Community Panel #230169 0009 B (dated 1985), for the vicinity indicates that the Site is within Zone C. A Community Flood Insurance Study has identified Zone C areas to be areas of minimal flooding.

2.4 NEARBY NATURAL RESOURCES

2.4.1 Wetlands

Summit observed wetlands type vegetation on the undeveloped portion of the Site. According to the National Wetlands Inventory Mapper (located at website http://mapper.tat.fws.gov), the Site includes a large area of freshwater forested/shrub wetlands.

2.5 ZONING

According to the Town of Harpswell Municipal Office personnel, the Site is located in "Shoreland Residential" and "Village" zones.

2.6 UTILITIES

2.6.1 Electricity

Electrical service is provided to the naval housing units via aboveground lines. An underground conduit system running from the Main Gate Area to the pier provides electricity to the tank farm area and the pier. A recent evaluation of Site utilities indicated that the electrical system at the Site is out-of-date.

2.6.2 Water

A drilled water supply well is present on the Site. A 1½ horsepower submersible pump equipped to pump at a rate of 12 gallons per minute (gpm) has been installed. A maximum pump rate of 450 gpd has been established by MEDEP to prevent drawdown of petroleum contamination into the well's capture zone.

2.6.3 Sewer

The Site is served by two private septic systems: one located adjacent to the naval housing units and one located in the lower tank farm area. A recent evaluation of Site utilities indicated that plumbing at the Site is in a state of disrepair.

2.7 RADON, ASBESTOS, AND LEAD BASED PAINT

Specific radon, asbestos, and lead-based paint (LBP) investigations were not performed as part of this report. Records reviewed during the completion of this ESA indicated that the naval housing units had an LBP abatement performed in 2004, as a condition of the transfer of

ownership to the Town of Harpswell. ACM was also encountered in the form of piping which was unearthed during the excavation of the leachfield adjacent to the housing units. Three cubic yards of ACM piping was removed and properly disposed of off-site. Flaking lead-based paint (LBP) and asbestos containing floor tiles were also removed from existing Site buildings.

According to the FirstSearch database search performed for the Site, radon has been reported in the area at 2.6 – 4.5 picocuries per liter.

2.8 POLYCHLORINATED BIPHENYLS

Summit did not observe polychlorinated biphenyl (PCB) containing items on the Site. Previous reports indicate the removal of PCB-containing transformers took place as part of the remedial actions at the Site details of the PCB-containing transformers removed from the Site are included in the Site History Section (Section 2.1.1) of this report.

3.0 RECORDS REVIEW

3.1 LOCAL FILE REVIEWS

Summit visited the Town of Harpswell Assessor's office to obtain information concerning the subject property and its abutters (see Section 2.2). The tax map was obtained by Summit from the Assessor's office (Figure 3) and indicates that the subject property is identified as Lots 3 and 4 on Map 13. Summit also reviewed previous assessments on the Site that were available at the Harpswell Town Office, a summary of which can be found below.

Environmental Assessment Real Property Transfer (June 2000): Describes several potential reuse options for the Site, including: A recreational & industrial reuse plan based on 25 employees at the Site; a recreational only reuse plan; a no action alternative; and a recreational & industrial reuse plan based on 100 employees at the Site.

Project Close Out Summary for 163 Harpswell Road (October 2004): Documents the lead abatement performed by Abatement Solutions, Inc. on Building #163 at the Site.

Fuel Depot General Building Condition Assessment (January 2006): Determined that several Site buildings require upgrades in roofing material and electrical/plumbing systems if they are to be in compliance with applicable building codes. The report also recommended additional testing for and removal of ACM and LBP from Site buildings, and indicated that ACM is still present on the mechanical systems within Generator Building #159.

DFSP Harpswell XRF Sample Locations (April 2006): A figure documenting XRF sample results from soils adjacent to the Naval Housing Units (Buildings #162 and #163). Highest concentrations were detected in SS-2 and SS-3, adjacent to Building #162. These values were 2140 ppm and 1460 ppm, respectively.

3.2 STATE SPILL SITES DATABASE

Summit obtained Federal and State environmental regulatory databases from FirstSearch. Pertinent information is presented in the following sections. The database search report (including databases searched, radius search distances, and detailed information regarding listed properties) is presented as Appendix B.

Summit reviewed the MEDEP files for Harpswell on May 31, 2006 as well as data provided by FirstSearch to evaluate whether there were records documenting oil or hazardous materials spills at the subject property. FirstSearch spill results were provided from 1980 through 2006 (last updated February 4, 2006).

Based on this review, seven spills were identified at the subject property. These spills are summarized in Table 2.

TABLE 3:
SPILL LOCATIONS

Spill Location	Address	Date	MEDEP Spill Number	Distance From Site	Spill Details
Mitchell Field	Route 123 Harpswell, Maine	December 16, 1983	P-196-1983	The Site	MEDEP visited the Site to investigate a leak in a pipeline at the Site. MEDEP also observed free product in dike #3, and indicated that Tank #4 may have been the source. No plans to empty Tank #4 and investigate its condition were made. MEDEP recommended no further action in the pipeline leak, but indicated that the source of oil in dike #3 warrants further investigation.
Mitchell Field	Route 123 Harpswell, Maine	April 6, 1984	P-61-1984	The Site	MEDEP was notified when a 10-gallon puddle of product was observed next to Tank #13. The tank was emptied and test pits were dug in the area of the spill but no free product was observed. One month later, MEDEP made a follow-up visit to the Site and found Tank #13 to be empty, and indicated that it would remain so until repaired.
Mitchell Field	Route 123 Harpswell, Maine	May 2, 1985	P-100-1985	The Site	MEDEP made a site visit to investigate a small leak in a pipeline 10 feet to the south of the north berm for Tank #1. Approximately 10 gallons of product had spilled as a result of the leak, which was cleaned using sorbent pads. No further MEDEP action is documented.
Mitchell Field	Route 123 Harpswell, Maine	October 8, 1985	P-265-1985	The Site	MEDEP investigated a leak in the bottom of Tank #9 at the Site. Product was being removed from the tank at the time of the Site visit and containment was in place. No further action was deemed necessary by MEDEP.

TABLE 3: SPILL LOCATIONS (Continued)					
Mitchell Field	Route 123 Harpswell, Maine	October 28, 1985	P-313-1985	The Site	MEDEP responded to a spill at the Site. Approximately 150-170 gallons of jet fuel (JP-5) had spilled as a result of a leak in a pipe adjacent to Tank #1. Sorbent pads were used to clean up the impacted areas, and an unknown amount of petroleum-impacted material was taken to Strawberry Creek Recycling Center for incineration. The associated spill report indicated that cathodic protection was being installed on the pipeline to prevent future issues. No further MEDEP action was taken.
Mitchell Field	Route 123 Harpswell, Maine	April 25, 1990	P-245-1990	The Site	MEDEP visited a UST removal taking place at the Site. Volatile organic vapor contamination was detected in the range of 200-300 ppm in soils adjacent to the tank, and additional contaminated soil was encountered in the pipeline trench leading from the tank to Building #130. Approximately 400-500 cubic yards of impacted soil was removed to be spread on-site. No further MEDEP action was required.
Mitchell Field	Route 123 Harpswell, Maine	November 19, 1991	P-677-1991	The Site	MEDEP visited the Site during the removal of nine USTs. Petroleum-contaminated soil was observed around UST #4 (five cubic yards), UST #11 (20-30 cubic yards). During excavation, the drain pipe to UST #4 was punctured, resulting in the discharge of approximately five gallons of jet fuel JP-5. One hundred additional cubic yards were excavated and removed from this location, resulting in a total of 130 cubic yards of excavated soil. Excavated soil was aerated on-site. On a subsequent visit to the Site in February 1992, MEDEP personnel observed an oily sheen on the water in the new well where UST #9 was located. MEDEP recommended further investigation.

3.3 STATE FILE REVIEW

The following investigative and remediation reports were reviewed at MEDEP on July 5 & 6, 2006. Reports are listed in chronological order.

Hydrogeologic Site Assessment (May 1991): Concluded that in future residential scenarios, consumption of on-site groundwater may adversely affect human health. Groundwater quality should be monitored on a quarterly basis from on-site monitoring wells. Benzene levels from the tap in Administrative Building #126 should be monitored on a quarterly basis. Sonic/acoustic tests should be conducted to determine if fuel pipelines are possible sources of petroleum contamination.

Results of Water Level and Quality Monitoring (1994-Present): Reports documenting water levels in on-site monitoring wells, sample results, and intrinsic bioremediation monitoring have been compiled 2-4 times annually in accordance with MEDEP's requests. Reports are not available for 1996 and 1997, presumably because the majority of remedial activities were taking place at the Site during this period.

Data Report Geophysical Investigations; Bedrock Monitoring Well Installations and Sampling, (January 1995): Documented the installation of fifteen monitoring wells during the period September 6 to October 4, 1994. Water level data and sample results are included in its appendices.

Subsurface Investigation: Lower Tank Farm T5 Area (March 1995): Identified potential sources of petroleum release within the AST #5 area: the AST bottom, underground/aboveground fuel pipelines and manifolds, and two former waste oil USTs. Soil borings were conducted to determine the vertical extent of petroleum contamination, but competent bedrock was encountered before the vertical limit of contamination was reached. Soil fingerprinting indicated that contamination encountered was jet fuel and severely weathered diesel. Remediation to MEDEP Decision Tree "Intermediate" levels was recommended for the T5 area, including the placement of petroleum-sorbent booms within the stormwater drainage way located down-gradient of the Lower Tank Farm. A comprehensive subsurface investigation of both the Upper and Lower Tank Farms was recommended to better define the areas of petroleum contamination on-site.

Hydrogeologic Assessment (April 1996): Determined the most heavily impacted areas of petroleum contamination in soil to be Tanks 1,2,3,4,5, Pump House #2, and Tanks 7,8,10,12,13 and 14. The assessment also determined groundwater contamination to be most severe in the Lower Tank Farm surrounding Tanks 1,3 and 5. Petroleum contamination was detected in surface water samples taken downgradient of Tanks 3, 5, and 7. Petroleum contamination was detected in samples taken in the drainage channel leading from Tank 14. The report recommended a risk assessment be conducted to evaluate ecological and human health risks associated with potential uses of the property. The report also recommended a hazardous materials survey be performed prior to demolition/remediation activities on-site, as well as a biotreatability study to assess biodegradational potential of petroleum-impacted soils on-site.

Bio-feasibility Study (October 1996): Determined that intrinsic bio-remediation occurs within areas of low to moderate soil contamination on-site, and recommended on-going monitoring of intrinsic bio-remediation to supplement the water level and quality monitoring

conducted at the Site. Also determined that bioremediation is limited at increased depths bgs and in areas of severe petroleum contamination.

Environmental Baseline Survey (February 1997): This report summarizes previous environmental assessments conducted on the Site, and categorizes areas of the Site to identify which areas need further characterization and/or remediation. According to the report, the majority of the Upper and Lower Tank Farms, the Main Gate Area and Building #126 require additional remediation. The report also identified four data gaps: insufficient evaluation of the extent of sub-tidal zone sediment contamination; insufficient evaluation of the extent of stream sediment contamination; insufficient evaluation of lead contamination in surficial soils within the 14 tank berms; and the need for additional soil sampling for fuel oil/VOCs in areas requiring remediation.

Hydrogeologic Investigation: Former Solid Waste/Demolition Debris Landfill (June 1997): This report concluded that the solid waste landfill located on the Site is not adversely impacting soil, groundwater or surface water in the area surrounding the landfill. Groundwater in the landfill area was determined to flow in a northeasterly direction towards the unnamed stream on the Site. The report recommended the wetlands be delineated in the landfill area; the removal of bulky debris; addition of soils to prevent contact hazard; and re-grading of the landfill prior to closure.

Soil Leachability Study (December 1997): Concluded that VOCs were not present in unsaturated zone soils at concentrations that will adversely impact groundwater on-site. The report also determined that DRO-impacted soils on-site will likely impact groundwater to levels ranging from 59 to 117 ug/L.

On-Site Cold-Mix Asphalt Recycling Report (March 1998): Documents the removal of fourteen ASTs and associated pipelines located on the Site. A composite sample was taken from the oiled-sand layer beneath each of the ASTs to determine if it exhibited RCRA waste characteristics. After analysis indicated that it did not, it was stockpiled on-site prior to treatment. Gravel fill was encountered beneath the oiled-sand layer at depths averaging 2.5 feet. Composite samples taken from the gravel fill layer analyzed for Fuel Oil reported concentrations ranging from non-detect to 6,200 ppm. Fill was not excavated and removed for treatment. Soil determined to be petroleum-saturated was removed and treated with the oiled-sand. Impacted soils were asphalt-batched on-site and reused for Site roadways.

Remedial Action Completion Report: Main Gate Area (April 1998): Documents the remedial activities that took place at the Main Gate Area during June and July 1997. Soil impacted above 30 mg/kg was excavated and removed. A leachfield, distribution box and 1,500-gallon septic tank located within the excavation were also removed. Confirmatory samples taken from walls of the excavation that bordered Site roadways indicated petroleum contamination above the established threshold of 30 mg/kg. Excavation was discontinued with MEDEP approval based on non-detect PID readings from test pits dug on opposite sides of roadways that bordered the excavated area.

Supplemental Site Characterization (May 1998): Soil samples taken from the tank berm area analyzed for the presence of lead reported concentrations uniformly below the trespasser/adult worker clean-up guideline of 700 mg/kg. Samples taken adjacent to Site

buildings were below the trespasser standard with the exception of one. Test-pits and soil borings done in the former drum storage area and upper tank farm area indicated petroleum-impacted soil at concentrations above 870 mg/kg at both locations. The report identifies the Tank 10 area as the most severely contaminated.

Landfill Closure Record Report (September 1998): Documents the formal closure of the landfill located on the Site. Minor modifications to the original design were made and approved by MEDEP. Closure activities included clearing & grubbing, removal of bulky debris, regrading and placement of soil cover over the landfill.

Remedial Action Completion Report (April 1999): Documents the excavation of petroleum-impacted soils on-site. Approximately 54,000 tons of contamination soil taken from the upper and lower tank farm areas and former drum storage area and treated on-site using Low Temperature Thermal Desorption (LTTD). Confirmatory samples were taken from the walls and bottoms of excavated areas in accordance with MEDEP protocols, and excavation was extended until samples reported concentrations below the established threshold of 870 mg/kg. Remedial activities also included the removal of a remediation system that was no longer in use. Three recovery wells were abandoned and backfilled with clean berm material and an 8,000-gallon steel oil/water separator was pumped out and taken off-site for disposal.

Long Term Monitoring Plan/Groundwater Quality Monitoring Program (October 1999): Recommends the continuation of groundwater quality monitoring twice each year.

Facility Remediation Closure Report (February 2000): Documents the history of remedial activities at the Site, including:

- Closure of the Site landfill.
- Removal of fourteen USTs once located on the Site and remediation of contaminated soil discovered adjacent to former UST #10.
- Removal of fourteen ASTs and associated pipelines.
- Removal of oiled-sand layer beneath each AST and petroleum-saturated soil from the Upper and Lower Tank Farm areas.
- Removal of soil impacted above 30 mg/kg from the Main Gate Area as well as the septic system located within the excavated area.
- Excavation and treatment of petroleum-impacted soil above 870 mg/kg in the Upper and Lower Tank Farm and Former Drum Storage Areas.
- Removal of ACM and LBP from Site buildings.
- Removal of PCB-containing transformers and oil-filled switches from the Site.
- Removal of concrete oil/water separators and closure of product recovery system.
- Installation of a new Water Supply Well.

Results of Pump Test and Water Quality Monitoring for New Water Supply Well (June 2000): A six-inch diameter bedrock well was drilled on the southern portion of the Site on June 11, 1998. The total depth of the well is recorded as 275 feet BGS and includes 60 feet of casing. A 48-hour pump test was conducted, after which samples were taken for DRO, GRO and VOC analysis. Samples did not report DRO, GRO or VOC concentrations above method detection limits. The water level in the well, as measured by data loggers during the pump test, remained more or less static.

Results of Extended Pump Test and Aquifer Characterization (April 2001):
Documents the results of a 72-hour pump test performed on the Water Supply Well located on-site. Determined that a high degree of fracture connectivity is likely on the eastern portion of the Site based on the drawdown observed in the former Water Supply Well during the pump test. The report also determined the Main Gate area to be within the capture zone, and stated that this could lead to groundwater petroleum contamination due to residual contamination in soils surrounding the Main Gate area.

3.4 REGISTERED UNDERGROUND STORAGE TANKS

The MEDEP has an on-line list of active and out-of-service registered USTs, including tanks that have not been properly abandoned. A Summary of USTs formerly located on-site is found in Table 3 below.

TABLE 4:
UST LOCATIONS

Site Name	Location	Distance/ Direction From Site	Tank Details; Contents/Capacity	Status
Mitchell Field	Route 123 Harpswell, Maine	The Site	#2 Fuel Oil/1,000 gallons	**Removed** Installed 9/52 Removed 6/85
			#2 Fuel Oil/1,000 gallons	**Removed** Installed 9/52 Removed 6/87
			FSII/10,000 gallons	**Removed** Installed 6/85 Removed 11/91
			Waste Oil/1,000 gallons	**Removed** Installed 9/52 Removed 11/91
			Waste Oil/10,000 gallons	**Removed** Installed 9/82 Removed 11/91
			Diesel Fuel/5,000 gallons	**Removed** Installed 9/52 Removed 11/91
			Diesel Fuel/5,000 gallons	**Removed** Installed 9/52 Removed 11/91
			Waste Oil/1,000 gallons	**Removed** Installed 9/52 Removed 11/91
			Waste Oil/1,000 gallons	**Removed** Installed 9/52 Removed 11/91
			Regular Gasoline/1,000 gallons	**Removed** Installed 6/62 Removed 4/90
			Waste Oil/1,000 gallons	**Removed** Installed 9/52 Removed 11/91
			Waste Oil/4,000 gallons	**Removed** Installed 7/85 Removed 11/91
			#2 Fuel Oil/1,000 gallons	**Removed** Installed 9/52 Removed 6/87
			#2 Fuel Oil/1,000 gallons	**Removed** Installed 9/52 Removed 6/87
			Unknown/1,000 gallons	**Removed** Installation unknown Removal unknown

3.5 HISTORICAL USE INFORMATION

3.5.1 Sanborn Fire Insurance Rate Maps

Sanborn Fire Insurance Rate Maps (Sanborn Maps) did not provide coverage of the Site.

3.5.2 Aerial Photographs

Summit reviewed 1964 and 1980 aerial photographs of the Site and vicinity, on file at the Maine Geological Survey in Augusta, Maine and a 1998 aerial photograph of the Site and vicinity on the Maine GIS website. The 1964 and 1980 photographs depict the Site as developed with fourteen large ASTs, a pier and several buildings. The 1998 aerial photograph depicts the Site without the ASTs, which had been removed. See Appendix F for copies of aerial photographs of the Site and vicinity.

4.0 ENVIRONMENTAL SITE RECONNAISSANCE

4.1 METHODOLOGY AND LIMITING CONDITIONS

A site reconnaissance of the subject property and its vicinity was conducted on July 13, 2006. Weather conditions at the time of the Site reconnaissance did not affect the investigators ability of perform a thorough site evaluation. The reconnaissance was performed with the permission of the Town of Harpswell, the current owner of the Site. Ms. Katherine Chatterjee and Mr. Jay Chace of the Town of Harpswell were present during the Site walk-through. The reconnaissance consisted of a systematic traverse of the Site to visually observe Site improvements and grounds, including the housing units and main gate area, former upper and lower tank farms, pier and landfill area. Buildings located on-site were locked at the time of the walk-through, which prevented visual inspection of the building interiors.

4.2 OBSERVATIONS

The Site inspection consisted of observations of the subject property and immediate surroundings. The Upper and Lower Tank Farm areas were observed, as well as the pier, landfill, Main Gate area and exteriors of all Site buildings. Site buildings are kept locked, which prevented observation of building interiors. Complete descriptions and observations of Site buildings and features are included in Section 2.1.2 of this report.

5.0 INTERVIEWS

Summit interviewed Ms. Katherine Chatterjee and Mr. Jay Chace of the Town of Harpswell at the Site on July 13, 2006. Summit also contacted GZA for information regarding past operations at the Site on August 15, 2006. Information provided by Town of Harpswell and GZA Representatives is documented throughout this report. Photographs were taken during the Site visit on July 13, 2006 (see Appendix A).

6.0 FINDINGS

This Phase I ESA was conducted for the purpose of identifying information and/or the presence of a release, disposal, or threat of release, of potential hazardous materials affecting the subject property. The findings are summarized below:

- Soil contamination, above MEDEP-established clean-up level of 30 mg/kg, remains in the vicinity of the Main Gate area. Excavation and removal of the contaminated soils during the original remediation work was hindered by the presence of roadways and Site structures. A change in the risk scenario for the Site may also require remediation of contaminated soils in this area.

- Excavation and removal of soil from the Upper and Lower Tank Farm areas and Former Drum Storage area was based on trespasser's risk scenario. If a new risk scenario is adopted for the Site, it may warrant further investigation and/or remediation of contaminated soils in these areas.
- Lead-impacted soil, associated with LBP, exists in areas adjacent to the naval housing units. According to Ms. Katherine Chatterjee, Selectperson for the Town of Harpswell, remediation of lead-impacted soils has not occurred.
- Petroleum-contaminated material in the form of sludge from AST bottoms was reportedly disposed of within the former landfill, but monitoring wells in the vicinity of the landfill has not included DRO sampling, which may identify potential contamination from this source.
- Spill report P-677-1991 documents the presence of a 1,000-gallon UST that was removed at some point from the Site. Its exact location, contents, and other details are unknown.

7.0 OPINION

This assessment identified potential environmental conditions at the subject property. Due to the previous uses of the property as a fuel storage facility and previous environmental assessments indicating bedrock contamination, potential impacts to the groundwater and soil at the subject property exist. It is Summit's opinion that additional investigation and perhaps remediation is warranted based on a change in the risk scenario on which previous remedial activities were based.

8.0 CONCLUSION/RECOMMENDATIONS

Summit has performed a limited Phase I Environmental Site Assessment on the property known as Mitchell Field, and designated as Lots 3 and 4 on the Town of Harpswell Property Tax Map 13. This assessment was not conducted in accordance with ASTM Standard practice E1527-05. The objectives of this investigation were defined by the client as: to provide a summary of investigations and remedial activities that have occurred at the site and identify data gaps which may exist based on changing the risk scenario on which previous remediation activities were based.

8.1 RECOGNIZED ENVIRONMENTAL CONDITIONS

This assessment has revealed the following evidence of Recognized Environmental Conditions in connection with the Site:

- The site was used by the US Navy as a fuel depot from 1952 until 1991. During this time, through normal operations, many spills and leaks occurred at the site near and around ASTs and USTs.
- A landfill exists on the site. Many types of waste were disposed of in this landfill including petroleum contaminated soil and tank bottoms.

- Lead associated with LBP has been identified in the soil surrounding several onsite buildings exceeding the State of Maine's Remedial Action Guidelines.

- A discrepancy exists in the number of USTs once located at the Site. Records indicate either fourteen or fifteen USTs were removed from the Site, but details regarding the fifteenth tank (its location, contents, and date of removal) are not known. This could pose a redevelopment risk if the area was not cleaned up to the standard for the Site.

8.2 DATA GAPS AND RECOMMENDATIONS

Summit conducted a file review including review of previously completed environmental assessments conducted on the property at the offices of the MEDEP in Augusta, Maine on July 5 and 6, 2006 to determine data gaps and outstanding environmental issues in relation to the Site. Copies of the title pages and findings and conclusions sections are included in Appendix C. Findings and recommendations are discussed below:

- A drilled water supply well is present on the Site that has been approved to pump at a maximum rate of 450 gpd without drawing contaminated groundwater into the water supply. However, the amount of time for which this pump rate can be sustained without drawing in contaminated groundwater has not been determined. A pump test should be conducted on the onsite water supply well to determine if it will meet redevelopment goals of the Town of Harpswell.

- Remediation of contaminated soils on the Site was based on a trespasser risk scenario, for which a clean up guideline of 870 mg/kg (field screened) was established. Based upon the Town's redevelopment goals, this standard may not be stringent enough. In addition, the largest data gap for these areas (former tank farms and former drum storage) could be the levels of possible vapors beneath possible buildings. A Phase II ESA including a soil, groundwater, and vapor investigation should be conducted in the Main Gate area, Upper and Lower Tank Farms and Former Drum Storage area to assess current levels of petroleum contamination on the Site.

- Documentation of the disposal of tank bottoms within the landfill exists. Groundwater wells located downgradient of the on-site landfill have never been sampled for the presence of DRO. Possible downgradient contamination may impede development. Therefore, Summit recommends sampling these wells for DRO and VOCs.

- Files reviewed at the Harpswell Town Office indicate the presence of lead-contaminated soil ranging from 239 (parts per million) ppm to 2,140 ppm adjacent to the naval housing units (Buildings #162 and #163). According to Katherine Chatterjee of the Town of Harpswell, no remediation of lead-contaminated soil has occurred in this area. A soil investigation should be conducted in the area of the naval housing units (Buildings #162 and #163) to determine if lead contamination is present in the area.

9.0 SIGNATURE AND QUALIFICATIONS OF SUMMIT ENVIRONMENTAL PROFESSIONAL (S)

Summit performed services in a manner consistent with the request of the Client (MEDEP) for a limited Phase I ESA. This site assessment does not conform with ASTM E 1527-05 (Standard Practices for Environmental Site Assessments: Phase I Environmental Site Assessment Process).

Jon K. Cressey
Project Scientist

Dennis B. Kingman, Jr. CHMM
Manager, Environmental Services

10.0 REFERENCES

Interviews:

Mr. Jay Chace, Site Representative, interviewed July 13, 2006.

Ms. Katherine Chatterjee, Site Representative, interviewed July 13, 2006.

Ms. Robyn Saunders, GZA GeoEnvironmental, Inc., interviewed August 15, 2006.

Database Search:

DataMap Technology Corporation, "Environmental FirstSearch™ Report," compiled June 1, 2006.

State of Maine:

Department of Environmental Protection, records reviewed July 5 and 6, 1006.

Department of Human Services, Bureau of Health, Division of Health Engineering website http://www.state.me.us/dhs/eng/water/index.htm.

United States:

National Wetlands Inventory Mapper; website http://wetlandsfws.er.usgs.gov.

Federal Emergency Management Agency; website http://store.msc.fema.gov.

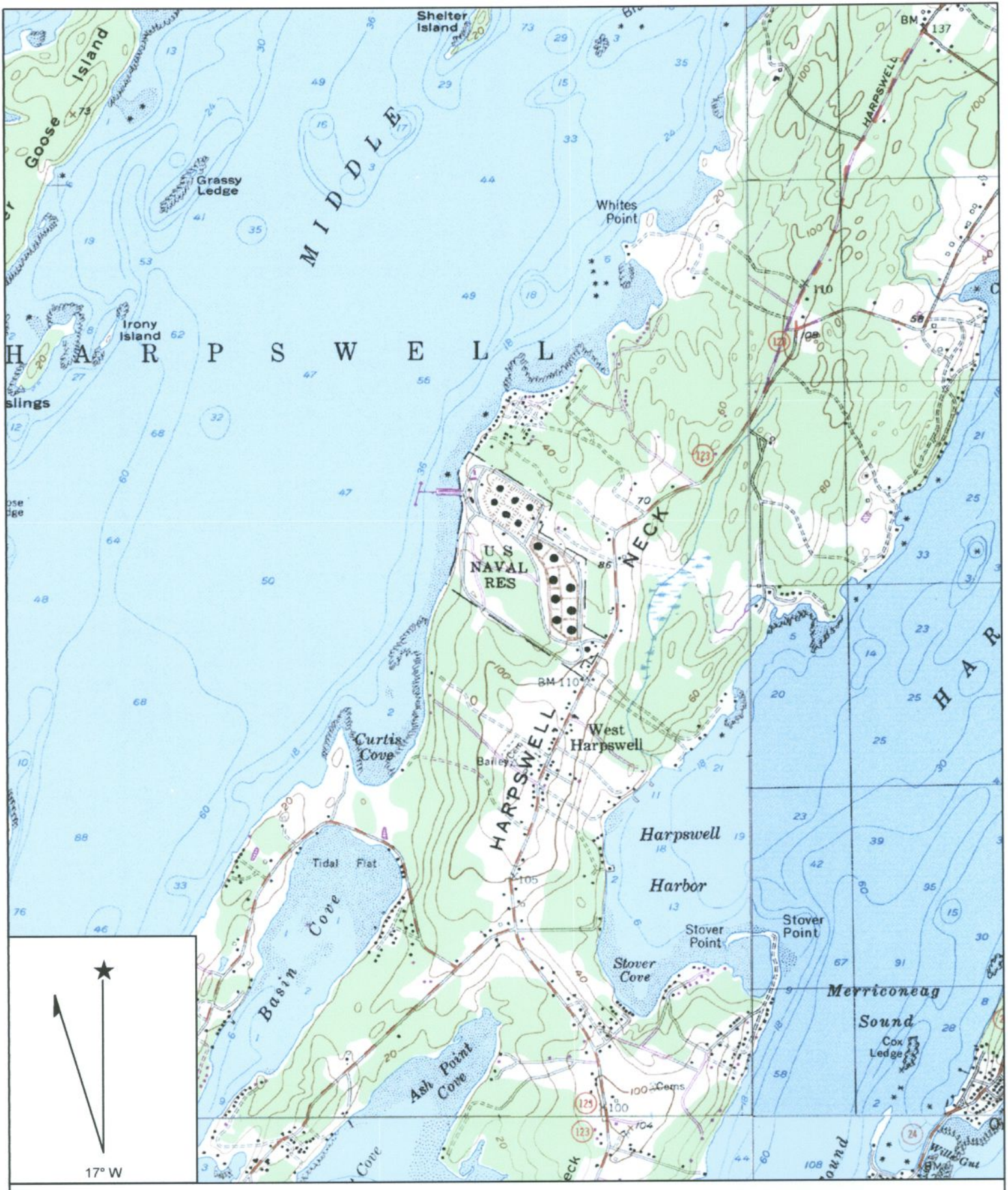
Resources:

ASTM, 2000, Standard Practice for Environmental Site Assessments. Phase I Environmental Site Assessment Process, ASTM E 1527-05.

United States Geological Survey; Harpswell 7.5-minute series topographic quadrangle, 1997.

Maine Geological Survey, Department of Conservation; "Bedrock Geology of the State of Maine", by Philip Osberg, et. al, 1985.

Maine Geological Survey, Department of Conservation; "Surficial Geology of the State of Maine", by Woodrow Thompson and Harold Borns, 1985.

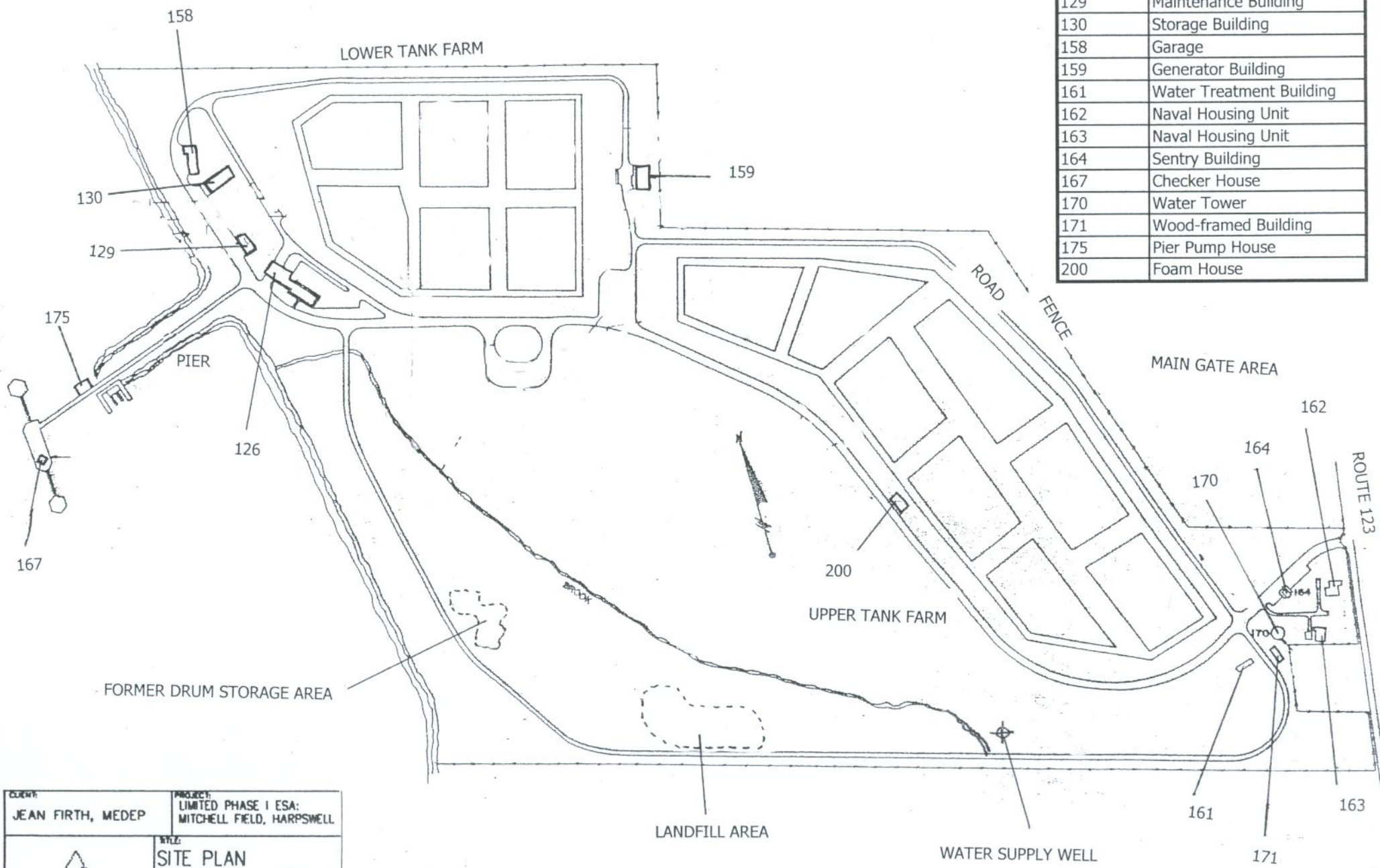


Name: FREEPORT
Date: 8/22/2006
Scale: 1 inch equals 2000 feet

Location: 043° 46' 23.8" N 070° 00' 53.5" W
Caption: FIGURE 1: SITE LOCATION
MITCHELL FIELD
HARPSWELL, MAINE

Copyright (C) 1997, Maptech, Inc.

Building #	ID
126	Administrative Building
129	Maintenance Building
130	Storage Building
158	Garage
159	Generator Building
161	Water Treatment Building
162	Naval Housing Unit
163	Naval Housing Unit
164	Sentry Building
167	Checker House
170	Water Tower
171	Wood-framed Building
175	Pier Pump House
200	Foam House



CLIENT: JEAN FIRTH, MEDEP

PROJECT: LIMITED PHASE I ESA: MITCHELL FIELD, HARPSWELL

TITLE: SITE PLAN MITCHELL FIELD

SUMMIT ENVIRONMENTAL CONSULTANTS, INC.
640 Main Street
Lewiston, Maine 04240

DRAWN:	SCALE:	
J.C.S	NTS	
DESIGN: ---	DATE: 8/21/06	FIGURE: 2
PROJECT NO.: 6971	APPROVED: J.K.C.	FILE NO.: 6971

PREPARED BY: AERIAL SURVEY & PHOTO, INC.
AIRPORT ROAD, NORRIDGEWOCK, MAINE
(207) 634-2006
BASED ON PHOTOGRAPHY DATED: 05-07-96

NOTE: The data on this map have been compiled from a variety of sources, granted variously by private land owners and official agencies and are not to be considered legal depictions of property boundary lines. The Town of Harpswell assumes no responsibility for the accuracy of individual sources. The information contained here, that is in part or

LEGEND: PARCEL NUMBER 38B
SURVEY OR DEED DIMENSION 181.37'
BUILDING
MATCH LINE
PARCEL AREA 20,000 SF or 7,000 AC
SUBDIVISION LOT NO. 7
SHORELINE (HIGH TIDE)
ADJACENT MAP M14

HORIZONTAL DATUM: MAINE STATE PLANE, WEST ZONE

PROPERTY MAP
TOWN OF HARPSWELL
CUMBERLAND COUNTY, MAINE
SCALE: 1"=200' APRIL 1, 2005

Appendix A

Site Photographs

SUMMIT
ENVIRONMENTAL CONSULTANTS INC.

PHOTOGRAPHIC LOG

Client Name:	**Project No.**
MEDEP	6971

Photo No. 1

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

View of Administrative Building #126, Lower Tank Farm area.

Photo No. 2

Date:
July 13,2006

Site Location:
Mitchell Field

Description:

Roadway along perimeter of Lower Tank Farm; Buildings #158, #130, #129.

SUMMIT
ENVIRONMENTAL CONSULTANTS INC.

PHOTOGRAPHIC LOG

Client Name:	**Project No.**
MEDEP	6971

Photo No. 3

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

View of Pier Pump House #175.

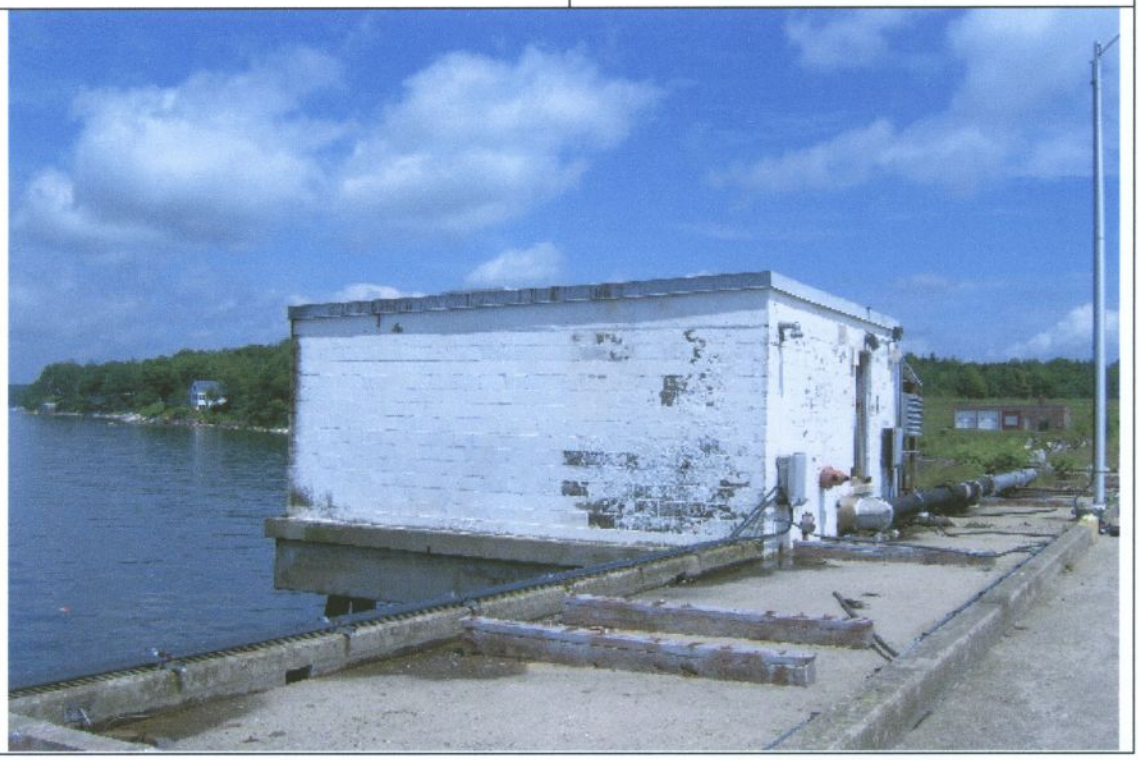


Photo No. 4

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

Frame of Storage Building #130, Garage #158.

SUMMIT
ENVIRONMENTAL CONSULTANTS INC.

PHOTOGRAPHIC LOG

Client Name:	Project No.
MEDEP	6971

Photo No. 5

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

Looking north from Main Gate area at Upper Tank Farm.

Photo No. 6

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

Upper Tank Farm area and Foam House #200.

SUMMIT
ENVIRONMENTAL CONSULTANTS INC.

PHOTOGRAPHIC LOG

Client Name:	**Project No.**
MEDEP	6971

Photo No. 7

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

Looking northeast at Lower Tank Farm area.

Photo No. 8

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

Concrete pad area adjacent to Lower Tank Farm; former location of Oil/Water Separator #180.

SUMMIT
ENVIRONMENTAL CONSULTANTS INC.

PHOTOGRAPHIC LOG

Client Name:	Project No.
MEDEP	6971

Photo No. 9

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

Looking north at Lower Tank Farm area

Photo No. 10

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

View of Site landfill from perimeter roadway.

SUMMIT
ENVIRONMENTAL CONSULTANTS INC.

PHOTOGRAPHIC LOG

Client Name:	Project No.
MEDEP	6971

Photo No. 11

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

New water supply well on Site.

Photo No. 12

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

Naval Housing Unit #163.

SUMMIT
ENVIRONMENTAL CONSULTANTS INC.

PHOTOGRAPHIC LOG

Client Name:	**Project No.**
MEDEP	6971

Photo No. 13

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

Naval Housing Unit #162.

Photo No. 14

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

View of Housing Unit #163 from Route 123.

SUMMIT
ENVIRONMENTAL CONSULTANTS INC

PHOTOGRAPHIC LOG

Client Name:	Project No.
MEDEP	6971

Photo No. 15

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

View of water tower on Site.

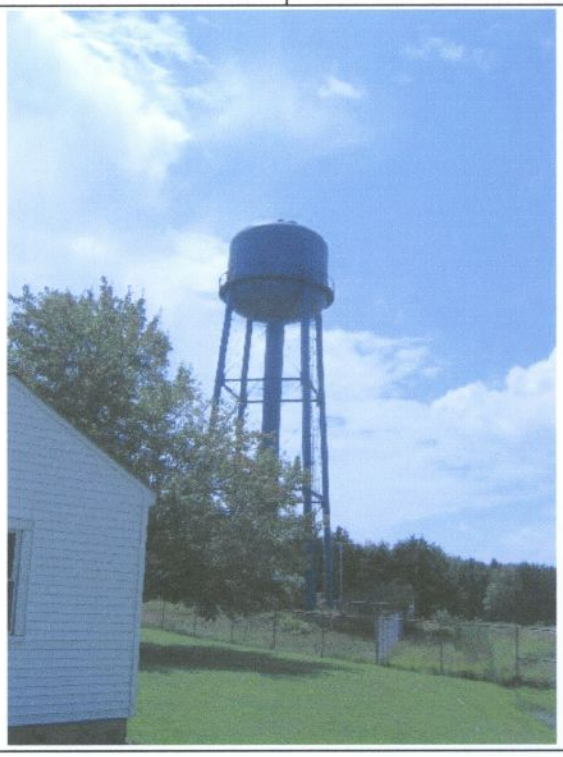


Photo No. 16

Date:
July 13, 2006

Site Location:
Mitchell Field

Description:

View of Main Gate area and Guard House #164.

Appendix B

Environmental FirstSearch™ Report

FirstSearch Technology Corporation

Environmental FirstSearch™ Report

TARGET PROPERTY:

HARPSWELL ME 04079

Job Number: 6971

PREPARED FOR:

06-28-06

Tel: (781) 551-0470 *Fax: (781) 551-0471*

Environmental FirstSearch is a registered trademark of FirstSearch Technology Corporation. All rights reserved.

Environmental FirstSearch
Search Summary Report

Target Site:

HARPSWELL ME 04079

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	04-10-06	1.00	0	0	0	0	0	0	0
CERCLIS	Y	03-08-06	0.50	0	0	0	0	-	0	0
NFRAP	Y	03-08-06	0.50	0	0	1	0	-	0	1
RCRA TSD	Y	04-16-06	0.50	0	0	0	0	-	0	0
RCRA COR	Y	04-16-06	1.00	0	0	0	0	0	0	0
RCRA GEN	Y	04-16-06	0.25	0	0	1	-	-	0	1
ERNS	Y	12-31-05	0.15	0	0	0	-	-	2	2
State Sites	Y	06-01-05	1.00	0	0	1	0	0	1	2
Spills-1990	Y	05-27-06	0.50	0	0	0	0	-	80	80
Spills-1980	Y	06-07-01	0.50	0	0	0	0	-	38	38
SWL	Y	03-01-06	0.50	0	0	0	0	-	7	7
REG UST/AST	Y	06-28-05	0.25	0	0	2	-	-	24	26
Leaking UST	Y	NA	0.50	0	0	0	0	-	0	0
Federal Land Use	Y	01-27-05	0.50	0	0	0	0	-	2	2
Brownfield	Y	05-01-06	0.50	0	0	0	0	-	2	2
- TOTALS -				0	0	5	0	0	156	161

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to FirstSearch Technology Corp., certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in FirstSearch Technology Corp.'s databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although FirstSearch Technology Corp. uses its best efforts to research the actual location of each site, FirstSearch Technology Corp. does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of FirstSearch Technology Corp.'s services proceeding are signifying an understanding of FirstSearch Technology Corp.'s searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

Environmental FirstSearch
Site Information Report

Request Date:	06-28-06	**Search Type:**	COORD
Requestor Name:	Joseph Siviski	**Job Number:**	6971
Standard:	AAI		

TARGET ADDRESS:

HARPSWELL ME 04079

Demographics

Sites:	161	**Non-Geocoded:**	156	**Population:**	NA
Radon:	2.6 - 4.5 PCI/L				

Site Location

	Degrees (Decimal)	Degrees (Min/Sec)		UTMs
Longitude:	-70.014522	-70::52	**Easting:**	418356.631
Latitude:	43.778172	43:46:41	**Northing:**	4847519.554
			Zone:	19

Comment

Comment: FILE REVIEW- MITCHELL FIELD

Additional Requests/Services

Adjacent ZIP Codes: 0 Mile(s)

ZIP Code	City Name	ST	Dist/Dir	Sel

Services:

	Requested?	Date
Sanborns	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
1	NFRAP	U S DEFENSE FUEL SUPPORT-PT CASCO ME4971590001/NFRAP-N	RTE 123 HARPSWELL(SO H ME 04079	0.15 SE	1
1	RCRAGN	US DEFENSE FUEL SUPPORT POINT CASC ME4971590001/SGN	RTE 123 SOUTH HARPSWEL ME 04079	0.15 SE	2
1	STATE	DEFENSE FUEL SUPPORT POINT (CASCO ME209/ACTIVE	ROUTE 123 (S HARPSWELL) HARPSWELL ME 04079	0.15 SE	4
1	UST	DEF FUEL SVC CTR CASCO BAY 06452	RT 123 HARPSWELL ME 04079	0.15 SE	5
1	UST	DEF FUEL SVC CTR CASCO BAY 16914	RT 123 HARPSWELL ME 04079	0.15 SE	8

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	BROWNFIELD	DEFENSE FUEL SUPPLY POINT REM01490/IC	ROUTE 123 HARPSWELL ME	NON GC	N/A
	BROWNFIELD	HARPSWELL ROUTE 24 DUMP SITE REM00155/IC	ROUTE 24 HARPSWELL ME	NON GC	N/A
	ERNS	TOWN OF SOUTH HAIPSWELL 276469/FIXED FACILITY	STRAWBERRY CREEK RECYCLING SOUTH HAIPSWEL ME 04079	NON GC	N/A
	ERNS	542166/UNKNOWN	RT 123 POTTS POINT HARPSWELL ME 04079	NON GC	N/A
	LANDUSE	BUREAU OF INDIAN AFFAIRS CONTACT I BIA-04079/NEPA CONTACT	ME 04079	NON GC	N/A
	LANDUSE	ENDANGERED SPECIES 23005-04079/NEPA	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	PAUL OCONNELL P-219-2003	EDGEWATER COLONY HARPSWELL ME	NON GC	N/A
	SPILLS	POLE 9.02 P8600	GUN POINT ROAD HARPSWELL ME	NON GC	N/A
	SPILLS	POLE 78 P-55-2002	SO HARPSWELL RD HARPSWELL ME	NON GC	N/A
	SPILLS	POLE 75 P-517-2002	BAILEY ISLAND RD HARPSWELL ME	NON GC	N/A
	SPILLS	POLE 505 P8590	RIDGE ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	POLE 4 P-794-2000	CRANBERRY HORN RD HARPSWELL ME	NON GC	N/A
	SPILLS	PELICAN PROPERTY MANAGEMENT P18397	GROVER LANE HARPSWELL ME 04079	NON GC	N/A
	SPILLS	POTTS HARBOR MYSTERY SPILL P35097	POTTS HARBOR & RT. 123 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	PARKEE, LEON P92499	CNR RTE 24 & JOHNSON PT. RD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	OUELLETTE, MAURICE P24799	RR 1 BOX 469 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	NEWMAN, LAURENCE P70499	LONG POINT ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	QUALE SUMMER PROPERTY P47599	GRASSY RD. OFF FR 893 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	MYSTERY SPILL P33896	ROUTE 24 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	SHUFELDT, JAMES P62995	BOX 2447, HOLBROOK ST HARPSWELL ME 04079	NON GC	N/A

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	SPILLS	MYSTERY SHEEN P60799	OFF POINTVIEW ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	MYSTERY AT BETHEL POINT TO YARMOUT P34796	END OF BETHEL POINT ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	NEAR ALLEN SEAFOOD P17796	LOOKOUT POINT ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	SUNSET COVE MOBILE HOME PARK P44899	SUNSET COVE RD. HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P-40-2002	14 ARBORETUM WAY HARPSWELL ME	NON GC	N/A
	SPILLS	WOODSUM RESIDENCE P33690	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	WILLIAMS, MICHAEL C P6421	WARREN STREET HARPSWELL ME	NON GC	N/A
	SPILLS	WAGGEL, ROBERT P64599	ESTEBROOK ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	VANDAME, YEUS P97499	PO BOX 132 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	TRUCK ACCIDENT P81892	ORR S ISL HARPSWELL ME 04079	NON GC	N/A
	SPILLS	SAUNDERS PROP. P51290	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	THEBERGE, RUSSELL P11398	SINNETT LANE HARPSWELL ME 04079	NON GC	N/A
	SPILLS	RAYMOND (RES) P8931	1841 HARPSWELL ISLAND RD HARPSWELL ME	NON GC	N/A
	SPILLS	SUNKEN VESSEL P53597	MACKEREL COVE HARPSWELL ME 04079	NON GC	N/A
	SPILLS	STRAWBERRY CREEK RECYCLING CTR P-146-2002	MOUNTAIN RD HARPSWELL ME	NON GC	N/A
	SPILLS	KNOLL, PAT P7121	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	SENTER S BED & BREAKFAST P21192	FR 858 & RT. 123 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	MYSTERY P32591	POTTS POINT, AT END OF RT 1 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	ROADSIDE DITCH P2498	CRANBERRY HORN HILL ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	RESIDENCE P49499	ROUTE 123, BOX 398-G HARPSWELL ME 04079	NON GC	N/A

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	SPILLS	TOXIC LEDGE P6751	BAILEY ISLAND HARPSWELL ME	NON GC	N/A
	SPILLS	CMP - POLE 41 P-1009-2004	CUNDYS HARBOR RD HARPSWELL ME	NON GC	N/A
	SPILLS	MCARTHUR, KENNETH P11299	805 ROUTE 123 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	EISENHOWER COVE RD P59797	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	EAGLE ISLAND P46794	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	DOUGLAS RES. P26494	CORNER HILDRETH & WHARF RD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	DFSP OIL TERMINAL P24590	RT 123, BOX 148 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	CUNDYS HARBOR LIBRARY P98699	CUNDYS HARBOR ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	FIRE ROAD 858 P65095	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	CMP POLE 9.1 P-302-2002	GUN POINT LINE RD HARPSWELL ME	NON GC	N/A
	SPILLS	FISHING VESSEL SPILL P51190	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	CMP - POLE 28 P-182-2005	OAK LEDGE RD HARPSWELL ME	NON GC	N/A
	SPILLS	CLEMENS, WILLIAM P46990	SHORE ACRES RD. HARPSWELL ME 04079	NON GC	N/A
	SPILLS	CHARLES & CAROLINE PEROW P-717-2002	PINKHAM POINT RD HARPSWELL ME	NON GC	N/A
	SPILLS	CEDAR LEDGE P-846-2002	QUAHOG BAY OFF NO RAGGED IS HARPSWELL ME	NON GC	N/A
	SPILLS	CARD COVE P-1045-2002	RT 24 HARPSWELL ME	NON GC	N/A
	SPILLS	BRYANT, ELIZABETH RUSSEL P26095	SOUTH HARPSWELL SOUTH HARPSWEL ME 04079	NON GC	N/A
	SPILLS	5TH HOUSE ON RT. AFTER AUBURN COLO P25898	ROUTE 123 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	CONSTANCE ROBERTS P-1160-2004	239 HARPSELL RD - RT 24 HARPSWELL ME	NON GC	N/A
	SPILLS	JILL GOLDSACK P-349-1998	LITTLE CROW POINT RD HARPSWELL ME 04079	NON GC	N/A

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	SPILLS	MEHTODIST CHURCH SUNDAY SCHOOL P87692	ROUTE 24 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	MCFADDEN, DAVE P65598	P.O.BOX 21 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	LOWELL COVE P18092	ORRS ISLAND HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P46592	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	KIMBERLY BERNET P48392	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	KELTNER, TRAVIS B. P27194	FIRE LANE 165 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	FIRE ROAD 691 P26896	ORR S ISLAND HARPSWELL ME 04079	NON GC	N/A
	SPILLS	JOHNSON PROPERTY P28697	ROUTE 24 HARPSWELL ME 04079	NON GC	N/A
	SPILLS	MUIR RESIDENCE P-434-2002	119 OAKLEDGE RD HARPSWELL ME	NON GC	N/A
	SPILLS	JEAN LEEMAN P-1240-2001	BAILEY ISLAND HARPSWELL ME	NON GC	N/A
	SPILLS	INTERSTATE LOBSTER CO P-119-2004	ASH RD HARPSWELL ME	NON GC	N/A
	SPILLS	INTERSTATE LOBSTER P29498	ASH POINT ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	HOLBROOKS STORE P78496	CUNDY S HARBOR RD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	GRAVES RESIDENSE P30599	SHADY ACRES - ASH COVE HARPSWELL ME 04079	NON GC	N/A
	SPILLS	GRANDSTAFF P7000	TRYON ROAD HARPSWELL ME	NON GC	N/A
	SPILLS	GOLDSACK, JILL P34998	LITTLE CROW POINT ROAD HARPSWELL ME 04079	NON GC	N/A
	SPILLS	JOHNSON, LAURELEE P98899	ORRS ISLAND HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P-976-2002	HIGH HEAD RD HARPSWELL ME	NON GC	N/A
	SPILLS	P43290	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P25193	HARPSWELL ME 04079	NON GC	N/A

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	SPILLS	P61891	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P16490	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P3392	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P70590	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P67791	HARPSWELL ME 04079	NON GC	N/A
	SPILLS	P74290	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P10585	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P32887	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P40187	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P15288	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P32785	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P23984	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	WARD RESIDENCE P5880	ASH POINT RD. HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P19387	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P49989	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P49287	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	TRANSFORMER SPILL P6388	RESIDENTIAL PROP. HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P25784	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P486	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P25788	HARPSWELL ME 04079	NON GC	N/A

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	SPILLS80	P29386	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P27889	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P26488	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P32986	HARPSWELL ME 04079	NON GC	N/A
•	SPILLS80	DFSP OIL TERMINAL P26585	RT 123, BOX 148 HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	THRELKELD, RESIDENCE P1880	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	P31588	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	BURGESS MARKET & GAS P50186	RT. 123 HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	CAMPAGNA RESID. P22788	BETHEL POINT RD. HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	CHEM. SPILL / TRUCK ACCCIDENT P62989	HARPSWELL ME 04079	NON GC	N/A
•	SPILLS80	DFSP HARPSWELL P10085	RT. 123 HARPSWELL ME 04079	NON GC	N/A
•	SPILLS80	DFSP HARPSWELL P19683	RT. 123 HARPSWELL ME 04079	NON GC	N/A
•	SPILLS80	DFSP HARPSWELL FUEL TERMINAL P15285	RT 123 HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	BABINEAU RESIDENCE P13080	RT 123 BOX 111 HARPSWELL ME 04079	NON GC	N/A
•	SPILLS80	DFSP OIL TERMINAL P31385	RT 123, BOX 148 HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	DFSP PIPELINE LEAK P36187	RT 123 HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	GEORGE BUTTLE RESID. P61089	SOUTH HARPSWELL SOUTH HARPSWEL ME 04079	NON GC	N/A
	SPILLS80	NOYES RESID. P8288	SOUTH HARPSWELL SOUTH HARPSWEL ME 04079	NON GC	N/A
	SPILLS80	RESIDENCE P2683	RT. 24 BAILEY ISLAND HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	RESIDENTIAL SPILL P2889	HARPSWELL ME 04079	NON GC	N/A

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	SPILLS80	RESIDENTIAL SPILL P16687	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	RESIDENTIAL SPILL P54189	HARPSWELL ME 04079	NON GC	N/A
	SPILLS80	RICKER P42387	SOUTH HARPSWELL SOUTH HARPSWEL ME 04079	NON GC	N/A
	SPILLS80	DFSP HARPSWELL P6184	RT. 123 HARPSWELL ME 04079	NON GC	N/A
	STATE	DFSP PIPELINE (HARPSWELL TO BRUNSW ME467/ACTIVE	HARPSWELL ME 04079	NON GC	N/A
	SWL	4053/CLOSED	HARPSWELL ME 04079	NON GC	N/A
	SWL	5190/CLOSED	HARPSWELL ME 04079	NON GC	N/A
	SWL	HARPSWELL, TOWN OF S-008307/LICENSED	HARPSWELL ME	NON GC	N/A
	SWL	HARPSWELL, TOWN OF MESW-196/TRANSFER	HARPSWELL ME	NON GC	N/A
	SWL	HARPSWELL, TOWN OF S-021202/LICENSED	HARPSWELL ME	NON GC	N/A
	SWL	004053/CLOSED	HARPSWELL ME 04079	NON GC	N/A
	SWL	HARPSWELL, TOWN OF S-004053/LICENSED	HARPSWELL ME	NON GC	N/A
	UST	SMITH, JOHN T 15729	HARPSWELL ME 04079	NON GC	N/A
	UST	LOCKE, WILLIAM N 01503	RT 123 HARPSWELL ME 04079	NON GC	N/A
	UST	LOGAN, JANET 19765	HILBRETH RD HARPSWELL ME 04079	NON GC	N/A
	UST	LOTT, J ROBERT 07455	EDGEWATER COLONY RD HARPSWELL ME 04079	NON GC	N/A
	UST	ROSENBERG, IRWIN K 09335	HIGH HEAD RD HARPSWELL ME 04079	NON GC	N/A
	UST	SENTER BED & BREAKFAST 18181	FIRE ROAD 858 SOUTH HARPSWEL ME 04079	NON GC	N/A
	UST	THURSTON, BERNADETTE E 19557	RT 24 HARPSWELL ME 04079	NON GC	N/A
	UST	WEST HARPSWELL BAPTIST CHURCH 15867	RT 123 HARPSWELL ME 04079	NON GC	N/A

Environmental FirstSearch
Sites Summary Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

TOTAL: 161 **GEOCODED:** 5 **NON GEOCODED:** 156 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	Page No.
	UST	WILLIAMS, MARY 15811	FIRE RD 765 HARPSWELL ME 04079	NON GC	N/A
	UST	KORSIAK, HENRY 15054	RT 123 HARPSWELL ME 04079	NON GC	N/A
	UST	RUSSELL, LEONA G 12198	HIGH HEAD HARPSWELL ME 04079	NON GC	N/A
	UST	KAUFMAN, GORDON & LORNA 15015	ASH POINT RD HARPSWELL ME 04079	NON GC	N/A
	UST	INTERSTATE LOBSTER INC 16799	ASH POINT RD HARPSWELL ME 04079	NON GC	N/A
	UST	HOPSON, DORIS N 18119	HIGH HEAD RD HARPSWELL ME 04079	NON GC	N/A
	UST	HOLBROOKS STORE 19502	END OF CUNDYS RD HARPSWELL ME 04079	NON GC	N/A
	UST	HIGH HEAD FARM 01502	RT 123 HARPSWELL ME 04079	NON GC	N/A
	UST	GRAHAM, DONALD & INGRID 04234	THOMPSON RD HARPSWELL ME 04079	NON GC	N/A
	UST	ELIJAH KELLOGG CHURCH INC 06830	RT 123 HARPSWELL ME 04079	NON GC	N/A
	UST	DAY, ALAN ESTATE OF 19929	RT 123 HARPSWELL ME 04079	NON GC	N/A
	UST	DANE, MAXINE A 14734	TIDE MILL COVE RD HARPSWELL ME 04079	NON GC	N/A
	UST	CADY, BARBARA 20319	37 LITTLE CROW POINT RD HARPSWELL ME	NON GC	N/A
	UST	BUTTLE, GEORGE M 00856	HIGH HEAD RD HARPSWELL ME 04079	NON GC	N/A
	UST	BAILEY STORE 01315	RT 123 HARPSWELL ME 04079	NON GC	N/A
	UST	BUTLER, HOWARD 19716	LONG POINT RD GREAT ISLAND HARPSWELL ME 04079	NON GC	N/A

Environmental FirstSearch
Site Detail Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

CERCLIS NFRAP

SEARCH ID: 1 **DIST/DIR:** 0.15 SE **MAP ID:** 1

NAME: U S DEFENSE FUEL SUPPORT-PT CASCO BAY
ADDRESS: RTE 123
HARPSWELL(SO HARPSWE ME 04079
CUMBERLAND
CONTACT:

REV: 3/8/06
ID1: ME4971590001
ID2: 0101071
STATUS: NFRAP-N
PHONE:

DESCRIPTION:

ACTION/QUALITY	AGENCY/RPS	START/RAA	END
ARCHIVE SITE	EPA In-House		12-01-1982
DISCOVERY	EPA Fund-Financed		06-01-1981
PRELIMINARY ASSESSMENT NFRAP (No Futher Remedial Action Planned	EPA Fund-Financed		12-01-1982

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

RCRA GENERATOR SITE

SEARCH ID: 2 **DIST/DIR:** 0.15 SE **MAP ID:** 1

NAME: US DEFENSE FUEL SUPPORT POINT CASCO BAY
ADDRESS: RTE 123
SOUTH HARPSWELL ME 04029
CUMBERLAND
CONTACT: THOMAS-R RIFFE

REV: 4/16/06
ID1: ME4971590001
ID2:
STATUS: SGN
PHONE: 7032741507

SITE INFORMATION

CONTACT INFORMATION: THOMAS-R RIFFE
DFSC CAMERON STA ATTN DFSC-FQ
ALEXANDRIA VA 223046160

PHONE: 7032741507

UNIVERSE INFORMATION:

GOVERNMENT PERFORMANCE AND RESULTS ACT (GPRA)

GPRA PERMIT: *N - NO*
GPRA POST CLOSURE: *N - NO*
GPRA CA: *N - NO*
GOVERNMENT PERFORMANCE AND RESULTS ACT (GPRA)

GPRA PERMIT: *N - NO*
GPRA POST CLOSURE: *N - NO*
GPRA CA: *N - NO*
GPRA COMPLIANCE MONITORING & ENFORCEMENT: *N - NO*

SUBJECT TO CORRECTIVE ACTION (SUBJCA)

SUBJCA: N - NO
SUBJCA TSD 3004: N - NO
SUBJCA NON TSD: N - NO

SIGNIFICANT NON-COMPLIANCE(SNC): N - NO
BEGINNING OF THE YEAR SNC: N - NO
PERMIT WORKLOAD: -----
CLOSURE WORKLOAD: -----
POST CLOSURE WORKLOAD: -----
PERMITTING /CLOSURE/POST-CLOSURE PROGRESS: -----
CORRECTIVE ACTION WORKLOAD: N - NO
GENERATOR STATUS: SQG - SMALL QUANTITY GENERATOR: GENERATES 100 - 1000
KG/MONTH OF HAZARDOUS WASTE

HANDLER INFORMATION:

SECOND ID:
ACCESSIBILITY:
FED WSTE GEN OWNER: HQ
STATE WSTE GEN OWNER:

OFF SITE RECEIPT: U - UNKNOWN
COUNTY OWNER:
FED WASTE GEN: 1
STATE WSTE GEN:

HANDLER INFORMATION:

- Continued on next page -

Environmental FirstSearch
Site Detail Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

RCRA GENERATOR SITE

SEARCH ID: 2 **DIST/DIR:** 0.15 SE **MAP ID:** 1

NAME: US DEFENSE FUEL SUPPORT POINT CASCO BAY
ADDRESS: RTE 123
SOUTH HARPSWELL ME 04029
CUMBERLAND
CONTACT: THOMAS-R RIFFE

REV: 4/16/06
ID1: ME4971590001
ID2:
STATUS: SGN
PHONE: 7032741507

SECOND ID:
ACCESSIBILITY:
FED WSTE GEN OWNER: HQ
STATE WSTE GEN OWNER:

OFF SITE RECEIPT: U - UNKNOWN
COUNTY OWNER:
FED WASTE GEN: 2
STATE WSTE GEN:

NAIC INFORMATION

42271 - PETROLEUM BULK STATIONS AND TERMINALS

ENFORCEMENT INFORMATION:

VIOLATION INFORMATION:

HAZARDOUS WASTE INFORMATION:

D000
D001 - Ignitable waste

Environmental FirstSearch
Site Detail Report

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

STATE SITE

SEARCH ID: 3 **DIST/DIR:** 0.15 SE **MAP ID:** 1

NAME: DEFENSE FUEL SUPPORT POINT (CASCO BAY)
ADDRESS: ROUTE 123 (S HARPSWELL)
HARPSWELL ME

CONTACT:

REV: 6/1/05
ID1: ME209
ID2: REM01490
STATUS: ACTIVE
PHONE:

SITE INFORMATION

STATE STATUS: OVERSIGHT

FEDERAL STATUS: NO FURTHER REMEDIAL ACTION PLANNED 12/1/82; OPERATION & MAINTENANCE ACTIVITIES ONGOING
PROGRAM: UNCONTROLLED SITES
INSTITUTIONAL CONTROLS: YES
LISTING CHANGE:

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

REGISTERED UNDERGROUND STORAGE TANKS

SEARCH ID: 4 **DIST/DIR:** 0.15 SE **MAP ID:** 1

NAME: DEF FUEL SVC CTR CASCO BAY
ADDRESS: RT 123
HARPSWELL ME

CONTACT: CONTINENTAL SERVICES INC

REV: 6/28/05
ID1: 06452
ID2:
STATUS:
PHONE: 2078336232

SITE INFORMATION

TOTAL NUMBER OF ACTIVE TANKS: 0

TANK ID: 1
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: #2 FUEL OIL
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 2
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: #2 FUEL OIL
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 3
TANK STATUS: REMOVED
DATE INSTALLED: 01-JUN-1985
DATE REMOVED:

PRODUCT STORED: WASTE OIL/USED MOTOR OIL
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL WITH CATHODIC PROTECTION
PIPE MATERIAL: STEEL WITH CATHODIC PROTECTION

TANK ID: 4
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: WASTE OIL/USED MOTOR OIL
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 5

- Continued on next page -

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

REGISTERED UNDERGROUND STORAGE TANKS

SEARCH ID: 4 **DIST/DIR:** 0.15 SE **MAP ID:** 1

NAME: DEF FUEL SVC CTR CASCO BAY
ADDRESS: RT 123
HARPSWELL ME

CONTACT: CONTINENTAL SERVICES INC

REV: 6/28/05
ID1: 06452
ID2:
STATUS:
PHONE: 2078336232

TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1982
DATE REMOVED:

PRODUCT STORED: WASTE OIL/USED MOTOR OIL
TANK CAPACITY: 10000 GALLONS
TANK MATERIAL: FIBERGLASS - REIN PLASTIC - PETROLEUM ONLY
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 6
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: DIESEL
TANK CAPACITY: 5000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 7
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: DIESEL
TANK CAPACITY: 5000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 8
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: WASTE OIL/USED MOTOR OIL
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 9
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: WASTE OIL/USED MOTOR OIL
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED

- Continued on next page -

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

REGISTERED UNDERGROUND STORAGE TANKS

SEARCH ID: 4 **DIST/DIR:** 0.15 SE **MAP ID:** 1

NAME: DEF FUEL SVC CTR CASCO BAY
ADDRESS: RT 123
HARPSWELL ME

CONTACT: CONTINENTAL SERVICES INC

REV: 6/28/05
ID1: 06452
ID2:
STATUS:
PHONE: 2078336232

PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 10
TANK STATUS: REMOVED
DATE INSTALLED: 01-JUN-1962
DATE REMOVED:

PRODUCT STORED: REGULAR GASOLINE
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 11
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: WASTE OIL/USED MOTOR OIL
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 12
TANK STATUS: REMOVED
DATE INSTALLED: 01-JUL-1985
DATE REMOVED:

PRODUCT STORED: WASTE OIL/USED MOTOR OIL
TANK CAPACITY: 4000 GALLONS
TANK MATERIAL: STEEL WITH CATHODIC PROTECTION
PIPE MATERIAL: STEEL WITH CATHODIC PROTECTION

TANK ID: 13
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

PRODUCT STORED: #2 FUEL OIL
TANK CAPACITY: 1000 GALLONS
TANK MATERIAL: STEEL - BARE OR ASPHALT COATED
PIPE MATERIAL: GALVANIZED STEEL

TANK ID: 14
TANK STATUS: REMOVED
DATE INSTALLED: 01-SEP-1952
DATE REMOVED:

- More Details Exist For This Site; Max Page Limit Reached -

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

REGISTERED UNDERGROUND STORAGE TANKS

SEARCH ID: 5 **DIST/DIR:** 0.15 SE **MAP ID:** 1

NAME: DEF FUEL SVC CTR CASCO BAY
ADDRESS: RT 123
HARPSWELL ME

CONTACT: CONTINENTAL SERVICES, INC.

REV: 6/28/05
ID1: 16914
ID2:
STATUS:
PHONE: 2078336232

SITE INFORMATION

TOTAL NUMBER OF ACTIVE TANKS: 0

TANK ID: 1
TANK STATUS: REMOVED
DATE INSTALLED: 01-JUN-1985
DATE REMOVED:

PRODUCT STORED: ANTIFREEZE
TANK CAPACITY: 10000 GALLONS
TANK MATERIAL: STEEL WITH CATHODIC PROTECTION
PIPE MATERIAL: STEEL WITH CATHODIC PROTECTION

Environmental FirstSearch
Street Name Report for Streets within .25 Mile(s) of Target Property

TARGET SITE: HARPSWELL ME 04079

JOB: 6971
FILE REVIEW- MITCHELL FIELD

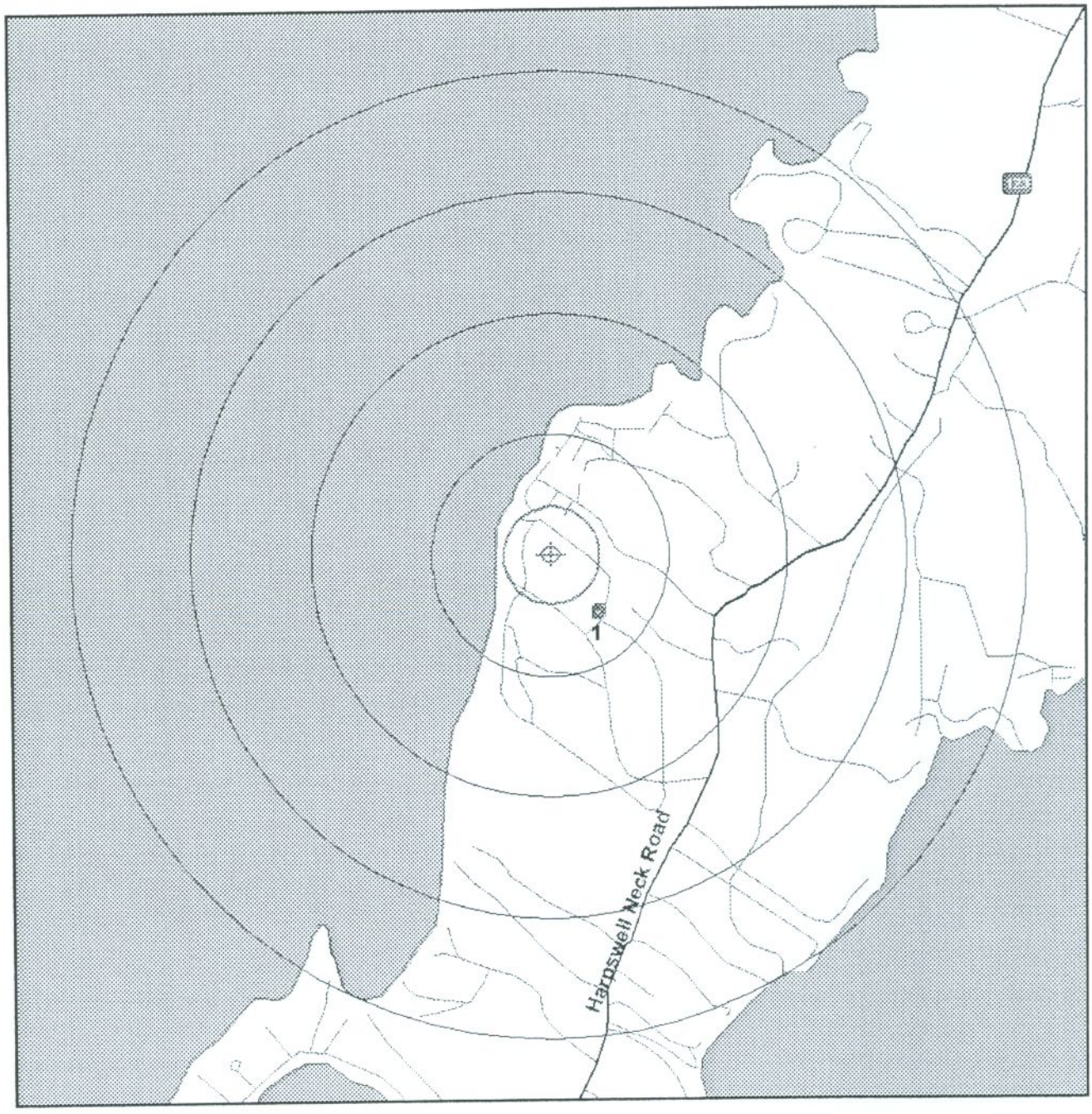
Street Name	Dist/Dir	Street Name	Dist/Dir
Birchmere Rd	0.12 NE		
Deep Water Run	0.22 NE		
Edgewater Colony Rd	0.24 NE		
Harbor Seal Rd	0.22 NE		
Piper Dr	0.09 NE		
Rock Spring Rd	0.12 NE		
Shell Ln	0.24 NE		
Teal Rd	0.17 NE		

Environmental FirstSearch

1 Mile Radius

ASTM Map: NPL, RCRACOR, STATE Sites

, HARPSWELL ME 04079



Source: 2002 U.S. Census TIGER Files

Target Site (Latitude: 43.778172 Longitude: -70.014522) .....

Identified Site, Multiple Sites, Receptor .....

NPL, Brownfield, Solid Waste Landfill (SWL) or Hazardous Waste

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.5 Mile Radius

Non-ASTM Map: Spills 90, Spills 80, Brownfield

, HARPSWELL ME 04079

Source: 2002 U.S. Census TIGER Files

Target Site (Latitude: 43.778172 Longitude: -70.014522) .....

Identified Site, Multiple Sites, Receptor .....

NPL, Brownfield, Solid Waste Landfill (SWL) or Hazardous Waste

National Historic Sites and Landmark Sites .....

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.5 Mile Radius

ASTM Map: CERCLIS, RCRATSD, LUST, SWL

, HARPSWELL ME 04079

Source: 2002 U.S. Census TIGER Files

Target Site (Latitude: 43.778172 Longitude: -70.014522) .....

Identified Site, Multiple Sites, Receptor .....

NPL, Brownfield, Solid Waste Landfill (SWL) or Hazardous Waste

Railroads .....

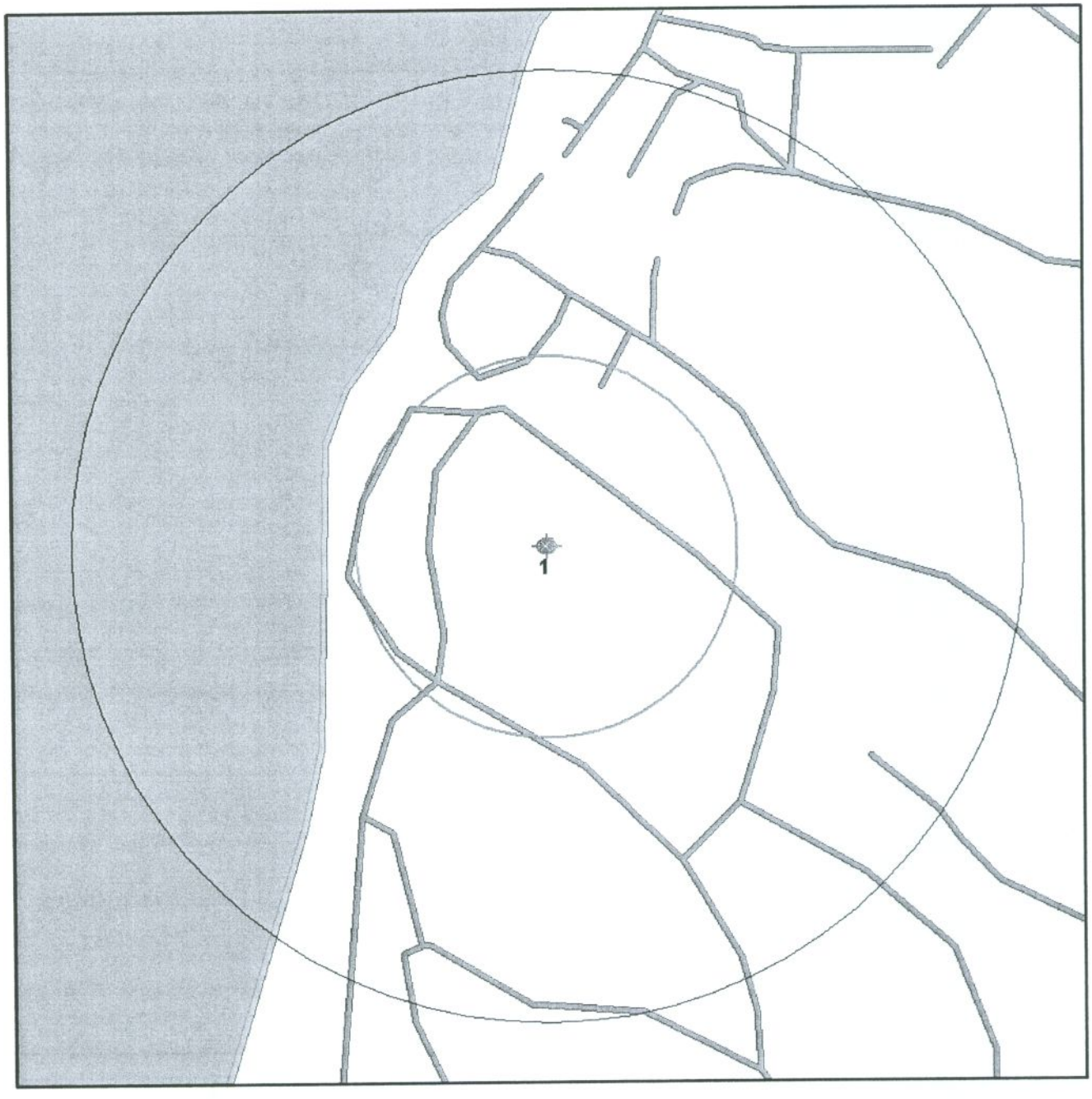
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.25 Mile Radius

Single Map:

, HARPSWELL ME 04079



Source: 2002 U.S. Census TIGER Files

Target Site (Latitude: 43.778172 Longitude: -70.014522) .....

Identified Site, Multiple Sites, Receptor .....

NPL, Brownfield, Solid Waste Landfill (SWL) or Hazardous Waste

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Appendix C

MEDEP File Review Information

REPORT

HYDROGEOLOGIC SITE ASSESSMENT
DEFENSE FUEL SUPPORT POINT
HARPSWELL, MAINE

MAY 1991

O'BRIEN & GERE ENGINEERS, INC.
100 SUMMER STREET, SUITE 2904
BOSTON, MASSACHUSETTS 02110

SECTION 9 - SUMMARY AND CONCLUSIONS

The following conclusions have been separated into those developed from, A) the pipeline study and, B) the terminal investigation. The conclusions relating to the terminal were further separated into those concerning the nature and source of contamination and the corresponding risks to public health, safety, and the environment associated with the contamination.

12-mile NAS Brunswick Pipeline

According to the soil vapor survey conducted by National Environmental Testing (NET), no definite identification was made of JP-5 at any site along the pipeline. Extraction points were spaced about every 500 feet. Very low concentrations indicative of jet fuel were noted around the former spill location reported in 1987. The values however, were below 1 ppmv. Additionally, no visual or olfactory indications of a full release were evident during this survey.

The results of the sonic/acoustic test of both pipelines indicated that there was no audio signal representative of a leak throughout their entire lengths.

DFSP Terminal

The subsurface geology beneath the Defense Fuel Supply Point (DFSP) terminal property consists of an upper layer of reworked native fill material which overlies a sequence of glacial deposits and/or bedrock. The thickness of the overburden varies from non-existent where bedrock is exposed to 45 feet on the south side of the terminal. Glacially deposited soil units consist of a sequence of glacial till (commonly occupying the lower portion), and glaciomarine sand or silt and clay. The glaciomarine soils are mainly confined to an area west of the main access road and the lower tank farm. Recently deposited discontinuous layers of swamp muck exist on wooded portions of the property.

The bedrock which underlies the terminal consists predominantly of an interbedded quartzite and phyllite schist typical of the area which is highly folded and faulted. Some faults and intrusive dikes have been documented to cross the terminal. The bedrock topography is somewhat irregular, but slopes with the land surface to the west, (Casco Bay).

Ground water occurs in both the overburden and bedrock. Although the hydraulic conductivity of the lithologic units is variable, ground water beneath the terminal flows westward toward Casco Bay. Some shallow ground water likely discharges to the unnamed drainage stream which traverses the middle of the terminal.

The terminal has been used for storage and transfer of JP-5, DF-M, DF-2, and aviation gasoline since 1952. Reported product spills have occurred primarily in tank berms 1, 2, 3, 4, 9, and 11. Product was also believed to have been released in tank berms 7 and 8, due to observable product stains in this area, and in tanks 13 and 14, due to reported tank bottom failures. Most spills were released from underground pipe lines or tank bottoms.

Fourteen underground storage tank locations exist on the terminal. Five of the 14 underground storage tanks have been removed. Two of these reportedly leaked, according to petro-tite tests. The underground tanks store No. 2 heating oil, diesel fuel, and regular gasoline.

Product releases noted in tank berm No. 1, in the area of the administration building, and near the gate house, have been characterized separately in studies performed by Groundwater Technology Inc. (GTI).

Other areas on the terminal identified as storage or disposal sites for materials potentially containing oil or hazardous substances, include the "old landfill", "incinerator area", "sludge pit", and "former drum storage area". Analyses for hazardous waste characteristics

performed in these areas indicate the soils and fill contents to be non-hazardous. Similarly, concentrations of petroleum hydrocarbons were either very low or non-detectable.

In the area of the tank farm, elevated total petroleum hydrocarbon concentrations noted in shallow soils of tank berms 1, 2, 5, and 7. Similar concentrations probably exist in tank berm 1, being investigated by GTI, and tank berm 4, where soils are currently being landfarmed. The highest TPH concentrations were noted in the area of visible product staining just outside of tank berm No. 7. Detectable TPH residues appeared to be confined to the shallow soil horizon. This area appears to be the main zone of total petroleum hydrocarbon contamination outside of the areas investigated by GTI.

Extensive soil analyses conducted for polynuclear aromatic compounds in soil borings resulted in no detectable concentrations. This is supported by the soil vapor study in which only localized concentrations were detected in tank berms 7 and 8.

These data indicate that although fairly significant cumulative amounts of historical spills have occurred in the tank farm, the physical migration potential of the heavier weight fraction and more importantly the mobile volatile fraction appears to be limited. This may be due to the predominantly fine grained soils on the terminal which have a higher residual water saturation. This restricts the number of pores available for vertical product movement. Also, if quantities of product were not sufficient to overcome residual oil saturation, the product will be retained and adsorbed by the soil. Once held in the shallow soil horizon, the product is susceptible to degradation by microorganisms and volatilization. According to Testa and Winegardner, "restoration of petroleum contaminated aquifers," 1991, large numbers of microorganisms are usually present in shallow unconsolidated aquifers. Typical components of petroleum products (BETX, napthtalene, and simple aliphatic compounds) can be degraded aerobically in unconfined aquifers. This appears to

be the case on the terminal and is being successfully exploited in on-going land farm treatment of soils at tank berm No. 4.

Ground water results also support the processes previously discussed, and indicate that only limited quantities of the more soluble aromatic hydrocarbons and light end hydrocarbons have dissolved into the shallow water table aquifer at the noted source areas detected in the soil study. These areas include the lower tank farm (tank berms 1, 2, 3, 4, and 5) and tank No. 7, as well as the area near the gate house (GTI results) and the oil recovery trench. Well No. GTI-1, located near the trench, indicated detectable aromatic concentrations, except benzene. No measureable non-aqueous phase product was noted on the water table. Shallow ground water concentrations in the second sampling round were mostly non-detectable.

Ground water in the lower bedrock at source areas was uncontaminated indicating effective dilution in this aquifer or adsorption of contaminants in the overlying soil units.

Surface water on-site was also uncontaminated, but sampling did not occur during a storm event which would have included runoff from the tank farm area. Sediments in the stream were not analyzed. The following was concluded with regard to the risk posed by site contaminants:

- Under current conditions, significant health effects that could be associated with the ground water, soil, on-site surface water, off-site surface water, sediment, or air pathways are not expected.

- Under future residential (worst case) conditions, significant heath effects associated with on-site surface water, off-site surface water, sediment, and air pathway are not expected.

- Under future residential conditions, health effects may be associated with the ground water if it is consumed. This is based on the presence of purgeable aromatics currently detected in the soil (i.e. benzene).

SECTION 10 - RECOMMENDATIONS

The following recommendations have been developed to address the current and future uses of the pipeline and terminal property. According to DFSC representatives, the potential exists for shutdown of the terminal and transfer of property at some point in the future. Therefore, based on conclusions developed thus far, recommendations include those for continued use by DFSC as a terminal and for future uses which may consist of residemtial, open space-conservancy, commercial land, or a combination thereof.

10.01 Current Use Scenario

NAS - Brunswick Pipeline

As long as the pipeline is maintained for its current use, it is recommended that inspections and monitoring be continued on a regular bases as is presently being done. No further testing or sampling is recommended at this time.

DFSP Terminal

According to the risk assessment, exposure pathways are either incomplete or exhibit no realistic risk for human or environmental receptors. The following environmentally-related efforts are recommended for the terminal while it remains government property.

- Submit this hydrogeologic assessment and risk evaluation report to Maine DEP Bureau of Oil and Hazardous Materials and Department of Human Services, Division of Disease Control for their review and comment.

- Continue on-going maintenance and best management practices, including spill prevention control, to minimize the potential risk of future spills or product releases relative to above ground fuel storage tanks and piping.

- Comply with the Maine Department of Environmental Protection Chapter 691, "Regulations for Registration, Installation, Operation, and Abandonment of Underground Oil Storage Facilities."

- On a quarterly basis, monitor the levels of benzene at the tap in the administration building. This is done to evaluate the nature of the contributing source of this contamination relative to the on-going product collection in the oil recovery trench.

- On a quarterly basis, monitor the ground water quality from selected shallow wells and all five deep bedrock wells on-site on a quarterly basis. Similarly, sample surface water in the stream after storm conditions and at the same time ground water samples are collected.

- The Maine DEP Bureau of Oil and Hazardous Materials is currently requiring clean-up levels of petroleum contaminated soils to be negotiated on a case-by-case basis. (Conversation with Mr. Rick Kasellis, Jan. 3, 1991). The treatment of and target levels for TPH contaminated soil on the terminal should thus be negotiated with DEP. Otherwise, it is appropriate in the interim to allow natural mechanisms to continue to degrade petroleum residuals in the shallow soils of the tank farm. This is appropriate since ground water concentrations are generally low to non-detectable and don't pose an imminent threat to humans or the environment.

- Conduct sonic/acoustic tests of fuel pipelines on the terminal to evaluate these conduits as potential sources of contamination.

10.02 - Future Use Scenario

NAS - Brunswick Pipeline

In the event that the pipeline property is deeded to a private entity and is determined to be abandoned or removed, contractor specifications must be developed. A contingency plan should be included in the specifications to address the health and safety of workers. Measures should be defined to address actions to be implemented if unforseen contamination is encountered.

DFSP Terminal

The appropriate measures to be implemented if the terminal is shut down will be dependent on the negotiated use of the property and required cleanup of site contamination. The transfer of the property will likely entail a fairly lengthy process. As such, the nature and extent of contamination defined in this study could change as compounds degrade or additional product releases occur. Additionally, the regulatory requirements and cleanup criteria associated with the determined use of the property could be modified from those that exist today. Regardless, if the property is designated to be transferred in the future, appropriate plans and specifications will need to be developed to address the future use. Similar to the pipeline, contractor specifications will be necessary including a contingency plan to address health & safety concerns and unforseen contamination. Additional site characterization, monitoring, and feasibility studies may be required to mitigate site related contamination and risks to future users and the environment.

DATA REPORT GEOPHYSICAL INVESTIGATIONS BEDROCK MONITORING WELL INSTALLATIONS AND SAMPLING DEFENSE FUEL SUPPORT POINT CASCO BAY SOUTH HAPRSWELL, MAINE

PREPARED FOR:
Defense Logistics Agency
Alexandria, Virginia

PREPARED BY:
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Portland, Maine

January 1995

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the DEP in a letter dated August 10, 1994. The purpose of this report is to transmit the geophysical data, boring and well completion logs, and results of additional sampling for your records.

As you are aware, we are preparing a scope and budget estimate for preparation of a supplemental site characterization report (Task Order ACO-0009). Consistent with the proposed Task 7 of our April 1994 Environmental Assessment Work Plan, the purpose of this site characterization report will be to further compile and interpret these data, and the available data on groundwater hydrology and environmental quality. It is intended to be a comprehensive reporting of the findings and conclusions of field and laboratory testing completed in 1994, and past investigations by others. The report will present GZA's conclusions regarding the significance of these data regarding site closure, remediation, and potential human and environmental exposures. Human and environmental exposures will be addressed through an exposure assessment outlining potential pathways for exposure to contaminated media and, therefore, serve as a foundation for a quantitative risk evaluation to support establishment of site cleanup standards. As we have discussed, the quantitative risk evaluation will proceed when the requisite data regarding the nature and distribution of soil contamination are obtained.

SCOPE OF WORK

Specific field tasks performed as part of this work, culminating in the construction and sampling of the bedrock monitoring well network, includes:

- Completion of a geophysical investigation to aid in refining drilling targets and in assessing bedrock morphology. Four types of geophysical surveys, including ground penetrating radar (GPR), seismic refraction (seismic), very low frequency electromagnetics (VLF-EM), and magnetometer, were conducted during August 11 through 17, 1994.

  These techniques were selected to aid in screening for the presence and character of bedrock surface morphology (GPR and Seismic), seismic low velocity zones which may correspond to joint or fracture concentrations (Seismic), and geologic contacts or bedrock joint concentrations (magnetometer and VLF-EM). The results of this work were used in adjusting locations and target depths for bedrock monitoring well installations.

- Drilling and construction of fifteen monitoring wells during September 6 through October 4, 1994. A locus plan of the site is provided as Figure 1. The locations of the newly installed monitoring wells are shown on the monitoring point location plan provided as Figure 2.

- Development of the newly installed monitoring wells by pumping, surging, and/or bailing on October 6, 7, 11, 12, and 13, 1994;
- Collection and laboratory analysis of water samples from the newly installed monitoring wells which were conducted during October 12 through 14, 1994;
- Completion of an elevation survey of the fifteen newly installation monitoring wells conducted during November 1994; and
- Preparation of this data report.

In general, the work was conducted in accordance with the proposed scope of work and methods outlined in GZA's work plan dated July 29, 1994.[1] The geophysical survey work was performed by Northeast Geophysical Services (NGS) of Yarmouth, Maine, under a subcontract agreement with GZA. The initial geophysical investigation program included GPR and magnetometer surveys. Based upon results early in the geophysical investigation, the GPR survey was discontinued and replaced with seismic refraction. NGS's geophysical survey report is included as Appendix B.

The drilling and monitoring well installations were conducted by Maine Test Borings, Inc. of Brewer, Maine, and were observed and logged by GZA personnel. The drilling program described in GZA's work plan was modified with consent of DFSP to include installation of two additional bedrock monitoring wells (total of twelve) and three overburden monitoring wells. The well locations are shown on the monitoring point location plan provided as Figure 2. A table summarizing the rationale for each drilling location and a summary of our findings is provided as Table 1. Borings logs with well installation details are included as Appendix C. Water level measurements obtained from these newly installed wells, as well as from existing monitoring points at the site, are summarized in Table 2. Surveyed reference elevations for each of the monitoring points are also included in the table.

Development and sampling of the fifteen newly installed monitoring wells were performed in accordance with GZA's work plan. Results of initial sampling and laboratory testing are summarized on Table 3. The analytical laboratory reports are included as Appendix D.

As discussed during recent telephone conversations, by the week of January 24, 1994, we will be transmitting a report summarizing the results of facility water level and quality

[1] GZA GeoEnvironmental, Inc., Work Plan, Geophysical Investigations and Bedrock Monitoring Well Installations, Defense Fuel Support Point, Casco Bay Terminal, Harpswell, Maine, prepared for Defense Fuel Supply Center of Alexandria, Virginia, dated July 29, 1994.

monitoring for the months of November and December 1994. The report will include recommendations regarding water level and water quality monitoring at the site for calendar year 1995 and, therefore, serve as a work plan for Maine DEP review and comment.

GZA appreciates the continued opportunity to be of service to DESC on this important project. If you have any questions, please contact us.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

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Attachments: Table 1 - Summary of Bedrock Drilling and Monitoring Well Installations
Table 2 - Water Level Measurements
Table 3 - Water Quality Sampling Results for Newly Installed Monitoring Wells
Figure 1 - Locus Plan
Figure 2 - Monitoring Point Location Plan
Appendix A - Limitations
Appendix B - Geophysical Survey Report
Appendix C - Test Boring/Monitoring Well Logs
Appendix D - Analytical Laboratory Reports

SUBSURFACE INVESTIGATION
LOWER TANK FARM T5 AREA
DEFENSE FUEL SUPPORT POINT-CASCO BAY
SOUTH HARPSWELL, MAINE

PREPARED FOR:
Defense Fuel Supply Center
Alexandria, Virginia

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March 1995
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Chlorinated VOCs, 1,2-dichlorobenzene, and 1,4-dichlorobenzene were reported as detected at or below method quantitation limits in samples submitted for analysis for purgeable aromatic and purgeable halocarbon hydrocarbons. Samples in which one or both of these compounds were detected included the trip blank and all of the groundwater samples with quantitation limits of 1 ug/l. A memorandum from the analytical laboratory, indicating that the dichlorobenzene contamination is suspected to be from the sample containers, is included with the analytical laboratory reports in Appendix C.2. No other purgeable halocarbons were detected in any of the samples.

Dissolved Lead - Lead was detected in all five of the groundwater samples submitted at concentrations ranging from 3 ug/l, in samples from wells T5-1, T5-7, and OGMW-22, to 11 ug/l, in the sample from well T5-10. None of the concentrations detected were above the MCL or MEG standards for lead. Results indicate no correlation of elevated lead concentrations with elevated concentrations of petroleum hydrocarbons.

5.00 SUMMARY OF FINDINGS AND CONCLUSIONS

5.10 FINDINGS

Based upon the information obtained and reviewed as part of this environmental investigation of the tank T5 area, GZA offers the following findings:

1. Numerous potential sources of petroleum release were identified in the T5 area including: the T5 AST, underground/aboveground fuel pipelines and manifolds, and two former locations of waste oil ("slop") USTs.

2. Results of soil borings indicate the diked portion of the T5 area is underlain by a sequence of thin (0.5- to 1-foot-thick) soil fill overlying up to 9.5 feet of weathered bedrock. Borings conducted outside of the diked T5 area, to the east, encountered a downward sequence of 1 to 4 feet of soil fill, 0.5 to 2.5 feet of glacial till, and up to 5.8 feet of weathered bedrock.

3. Weathered bedrock observed in the T5 area consists of micaceous schist which has a steeply dipping to near vertical foliation (layering) and steeply dipping fractures.

4. Water levels measured in September 1994 at monitoring points in the T5 area were roughly 3 to 5 feet below the ground surface within weathered bedrock. A comparison of the September water levels, with water levels measured at Lower Tank Farm monitoring points during April 1994 through February 1995, indicates the water table in the T5 area fluctuates seasonally from near the ground surface, within soil fill or glacial till, to depths up to 5 feet below the ground surface within weathered and/or competent bedrock.

5. Groundwater in the T5 area is estimated to flow in a northwesterly direction from the T5 area towards the southern portion of the tank T3 diked area, and stormwater drainageways for oil/water separators No. 3 and No.4. Actual groundwater flow directions are expected to be more complex, affected during seasonal high water table conditions, by the presence of the T5 catch basin, perforated and solid portions of the storm drain system, underground fuel pipelines, underground water lines, and other factors. Portions of storm drain lines and fuel pipelines in the T5 diked area appear to have been placed in shallow trenches in bedrock.

6. No floating separate phase hydrocarbons with a thickness greater than 0.01 feet were detected in the four newly installed T5 area monitoring wells or existing monitoring well OGMW-22. Trace amounts of SPHs with a thickness at or below 0.01 feet were only measured in wells T5-2 and OGMW-22.

7. PID jar headspace screening results were generally observed to increase with depth and were typically highest for samples of weathered bedrock consisting of fine to coarse sand-sized pieces of rock with lesser amounts of silt and gravel-sized pieces. Based upon the PID screening results, as well as visual and olfactory observations in the field, refusal on competent bedrock was encountered prior to encountering the vertical limits of petroleum contamination.

8. Petroleum contamination in the form of total fuel oil, total gasoline, and total BTEX was detected in soil and groundwater samples obtained at locations throughout the tank T5 area of concern.

   - Maine DEP Decision Tree "Stringent" and "Intermediate" clean-up goals for total gasoline and total fuel oil were exceeded in soil samples collected downslope (and downgradient) of the Booster Pump House and former waste oil UST, downgradient of underground fuel piping within the diked T5 area, and downgradient of the T5 AST. The extent of soil exceeding these clean-up goals is unknown but believed to extend beyond the area of investigation.

   - DEP Decision Tree "Stringent" clean-up goals (as well as Federal and/or State drinking water standards) for total fuel oil, total gasoline, and benzene were exceeded in water samples collected from two or more of the five groundwater monitoring wells in the T5 area. In general, the highest concentrations were detected in samples obtained in the four wells located within the diked portion of the T5 tank area.

9. Fingerprinting of soil samples in which petroleum hydrocarbons were detected indicated chromatographs in the boiling range of jet fuel and a mixture of jet fuel

and severely weathered diesel. Fingerprinting of water samples indicated chromatographs in the boiling range of jet fuel, a mixture of jet fuel and diesel, and a mixture of gasoline and jet fuel.

10. Results of total lead analyses on soil samples indicated lead concentrations were generally low and within the range reported for naturally occurring soil. Concentrations of dissolved lead detected in water samples were generally low. Samples with the highest lead concentrations did not correlate with locations where elevated concentrations of petroleum hydrocarbons were detected.

5.20 CONCLUSIONS

Based upon the findings of the environmental investigation, as listed above, GZA concludes the following concerning the tank T5 area:

1. The majority of petroleum hydrocarbon contamination in the tank T5 area consists of separate phase hydrocarbons adhered to soil/weathered bedrock and dissolved phase hydrocarbons in groundwater. The area of floating separate phase hydrocarbons observed in monitoring wells OGMW-22 and T5-2 appears to be limited in extent. The areal extent and thickness is not sufficient to warrant removal by engineered methods.

2. The horizontal limits of petroleum contamination appear to extend beyond the area of the tank T5 investigation. Given the results of this investigation, similar petroleum hydrocarbon contamination could exist in areas proximate or downgradient of Lower Tank Farm underground fuel lines and ASTs, or former USTs, located outside of the area defined for this investigation.

3. The majority of the petroleum hydrocarbon contamination appears to be within weathered bedrock. Seasonal water table fluctuations between fill/glacial till and weathered/competent bedrock has resulted in smearing of SPHs onto fracture surfaces of weathered and more competent bedrock. Data collected as part of this investigation suggests that SPH adhered to surfaces of bedrock fractures is acting as a continual source of groundwater contamination.

4. The spatial distribution of petroleum hydrocarbons detected, as well as the results of hydrocarbon fingerprinting, indicate more than one source for the T5 area petroleum contamination. Likely sources may include: leaks from the bottom of the T5 AST; leaks from underground fuel piping located inside and outside the T5 diked area; leaks from aboveground piping manifolds; and perhaps releases from spills in the areas of waste oil USTs.

5. Perforated portions of stormwater drain lines, may act as barriers to petroleum hydrocarbon migration at locations where they intersect the water table. Petroleum

migration may also to be influenced by shallow bedrock trenches for fuel pipelines, solid storm drain lines, and other subsurface utilities.

6.00 RECOMMENDATIONS

In consideration of the findings and conclusions of this environmental investigation, GZA offers the following three recommendations.

1. GZA recommends that a comprehensive subsurface investigation of the upper and lower tank farm areas and associated piping be conducted to better define the horizontal and vertical limits of petroleum in soil and groundwater. As indicated in the introduction of this report, the purpose and objectives of this environmental investigation were to evaluate the extent of petroleum contamination and gather hydrogeologic information which could be used to evaluate possible response alternatives. However, based upon the fact that the horizontal limits of petroleum contamination in the T5 area appear to extend beyond the limits of the investigation, and given the fact that analytical results suggest more than one source for the contamination, we believe evaluation of possible response alternatives is premature at this time.

2. GZA recommends that either DEP Decision Tree "Intermediate" clean-up goals or site-specific clean-up goals supported by a site-specific risk assessment be used for any future remedial activities in the T5 area. The Maine DEP Decision Tree "Stringent" clean-up goals would require clean-up of groundwater, as well as clean-up of soil and removal of "all free product." DEP Decision Tree "Intermediate" clean-up goals only require clean-up of soil and removal of "all free product." Based on the above-mentioned hydrogeologic conditions and vertical extent of contamination, we believe restoration of groundwater in the T5 area, to DEP Decision Tree "Stringent" clean-up goals, would be impractical.

3. GZA recommends that the petroleum-sorbent booms, placed within the stormwater drainageway downgradient of the stormwater drainage system for the Lower Tank Farm, continue to be checked/maintained and periodically replaced as needed.

HYDROGEOLOGIC ASSESSMENT
DEFENSE FUEL SUPPORT POINT
CASCO BAY
SOUTH HARPSWELL, MAINE

VOLUME I

PREPARED FOR:
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Defense Fuel Supply Center
Ft. Belvoir, Virginia

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April 1996
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of the direct contact and incidental ingestion pathways involve media located within the bounds of the DFSP property, pathway completion would be dependent upon the presence of trespassers to the site and utility/construction workers on-site. The site is currently fenced off and closed to the public. No contaminants have been detected in two recently completed sampling rounds of off-site residential water supply wells.

Pathway completion for exposure is possible through fugitive dust emission from contaminated soil. The presence of contaminants in surficial soils has been documented. However, due to the largely vegetated nature of the surficial soils at the site and the large physical distance between areas of contaminated surficial soils and local residences, potential exposure through this pathway is thought to be unlikely.

Pathway completion for exposure is also possible through direct contact and incidental ingestion to contaminated deep water sediments located adjacent to the facility pier. Exposure to these sediments is considered unlikely as the sediments are located beneath approximately thirty feet of water.

7.00 SUMMARY OF FINDINGS AND CONCLUSIONS

The following findings and conclusions are based upon the information described in Sections 2.00 through 6.00 of this report, together with the information obtained and reviewed as a part of previous phases of work at the site.

7.10 BACKGROUND AND SETTING

DFSP is located on the west side of Harpswell Neck approximately 1,000 feet north of the village of West Harpswell. The site encompasses about 67 acres and is bounded by Maine State Highway 123 (Route 123) to the east, Casco Bay to the west, and privately held land to the north and south. Residential properties abut the site to the east and northeast along Route 123.

The facility was commissioned as a fuel storage and pipeline facility by the U.S. Navy in 1952, and was operated as a fuel support point for BNAS and a strategic storage point for other military operations until approximately 1991. Operators of the facility have included the U.S. Navy, DFSC, and DFSC contractors, TENCO Services (prior to 1988) and Continental Services Corporation (October 1988 to present).

Predominant products handled by DFSP were the jet propulsion fuel mixture JP-5 and marine diesel fuel (DFM and DF-2), as well as smaller quantities of AV-gas. Other products handled in smaller quantities at the facility included gasoline and diesel for vehicle refueling and generator operation; #2 fuel oil for heating; waste/slop oil from fuel pumping and maintenance activities; fuel storage icing inhibitors (FSII+); and firefighting foams

and chemicals. Miscellaneous trash, construction debris, and tank bottom sludges generated by the facility were reportedly disposed on-site in a landfill until some time in the late 1970s or early 1980s.

The facility includes fourteen large ASTs used for fuel storage, including eight 80,000-barrel tanks and six 50,000-barrel tanks formerly used for JP-5, DFM, DF-2, and AV-gas storage, and a 300-gallon AST used to store FSII+ (Tank 15). Several of these tanks, including Tanks 4, 9, 10, 13, and 14, were removed from service during the period 1985 to 1990 because of possible structural problems (tank bottom failures related to base material washouts, etc.). The remaining tanks were removed from service in 1991. All ASTs have been cleaned and certified gas-free in accordance with Maine and federal requirements.

The DFSP site also formerly included 14 USTs, ranging in size from 1,000 to 10,000 gallons, which were used to store gasoline and diesel for truck refueling and generator operation; #2 fuel oil for heating; and, waste/slop oil from vehicle and pumping station maintenance activities. All of the 14 USTs were closed and removed during the period 1985 to 1991. The only identified leaking tank was UST-10, a 1,000-gallon gasoline tank located in the northwest quadrant of the facility.

Several spills of JP-5 and DFM estimated at 1,000 gallons or more have been documented. including several releases of JP-5 and DFM in 1982 (in the vicinity of ASTs 2, 3, and 11) and a release of JP-5 in the Tank 1/Tank 2 area in 1990. Based on a review of files for the DFSP facility from DFSC headquarters, the Maine DEP, and the DFSP facility, documentation on spills or releases that occurred prior to about 1978 is not available. Also, it is possible that undetected releases may have occurred during any time from the onset of operations until use of the facility was discontinued in 1991.

Currently, the DFSP facility is classified by the Maine DEP as an inactive federal facility rather than an oil terminal, and DEP project management for review and approval of site closure activities is being provided by the Federal Facilities Section of the Maine DEP Bureau of Hazardous Materials and Solid Waste Control (BHMSWC).

7.20 SITE HYDROGEOLOGY

7.21 Geologic Sequence and Hydraulic Properties

The geology of the DFSP site is typical of the regional geology and consists of a thin sequence of glaciomarine sediments overlying glacial tills and fractured metamorphic bedrock. The glaciomarine sediments are located in the topographically low lying, undeveloped central portion of the site where they are thickest, and gradually pinch out or interfinger with the glacial tills present along the southern property line and to the north, in the area adjacent to the developed tank farm. The mantling of glacial till over bedrock varies in thickness from nonexistent in areas of the Lower Tank Farm to approximately 60 feet thick in the till ridge on the southern border of the site.

The glacial tills observed during boring and test pit explorations on-site have been separated into three distinct units, a brown till, a gray till, and a lower "basal" till. The brown till encountered consisted of dense, brown, fine to coarse sand with some gravel, lessor amounts of silt, and trace clay. The brown till was observed to be most aerially extensive in the developed tank farm area of the site. In the Lower Tank Farm area, only a thin covering of the brown till was observed overlying weathered bedrock. In the Upper Tank Farm area, where both the brown and gray till were observed, the brown till was nearly always observed to overlie the siltier gray till.

The gray till encountered consists of dense, gray, mostly fine to coarse sand, and lessor amounts of gravel, silt, and clay. In addition to the color differences, the gray till is distinguished from the brown till by the greater percentage of silt and clay sized particles in the matrix. The gray till was observed primarily in the Upper Tank Farm area and the undeveloped central and southern portions of the site. The basal till was encountered very infrequently and does not constitute a major depositional unit.

The results of hydraulic testing conducted during a previous investigation by OB&G on five shallow wells indicate a range of hydraulic conductivity of 0.02 to 1.07 ft/day for natural soils and/or the upper portion of bedrock. Results in glacial till indicated values ranging from 0.02 to 0.05 ft/day and results from a well screened in till and the upper portion of bedrock was 0.6 ft/day. Hydraulic conductivity estimates developed by GZA based upon slug tests performed in three overburden monitoring wells installed at the site are 0.003 ft/day for well GZ-13 (screened in till), 0.80 ft/day for well GZ-3L (screened in glaciomarine silt and clay deposits), and 2.42 ft/day for well GZ-3U (screened in glaciomarine sand deposits). Based on the results of the hydraulic conductivity measurements, the horizontal seepage velocity in the glacial till material is estimated to be in the range of 0.0001 to 0.008 ft/day or 0.04 to 2.9 ft/yr.

Bedrock at the site consists of rocks belonging to the Cape Elizabeth Formation. The Cape Elizabeth Formation consists of biotite-muscovite schist and granofels with minor garnet-quartz schist and a distinctive rusty-weathering unit of biotite-garnet staurolite schist and phyllite. Both the Cape Elizabeth Formation undivided unit and rusty-weathering member were observed at the site.

The most common attitudes of joints or fractures observed in bedrock outcrops were oriented northeast parallel to foliation. A regional fault (shear zone) identified and referred to by Hussy as the Harpswell Neck high strain zone, can be traced northward from the southwestern tip of Harpswell Neck across the center of the site in the area of Tanks 7 and 8, and across lands abutting the site to the northeast. The predominant foliation observed in rock core samples consisted of a schistosity or compositional layering which dips moderate to steeply. The joint pattern attitudes observed in core samples ranged from very low angle (horizontal/subhorizontal or sheeting joints) to parallel to the steeply dipping foliation (foliation joints).

Hydraulic conductivity estimates developed for the bedrock wells range from 0.[illegible] ft/day in well GZ-9 to approximately 6 ft/day in well GZ-10. The hydraulic conductivity estimates obtained for the bedrock wells should be considered as a relative indication of the density and aperture of the fractures intersected by each well rather than estimates of the "hydraulic conductivity" for a representative area of the bedrock aquifer around each well. The horizontal seepage velocity in the bedrock material is estimated to be in the range of 0.04 to 60 ft/day or 14.6 to 21,900 ft/yr.

Based on the hydraulic conductivity estimates developed for the till and bedrock wells, the degree of fracturing observed in bedrock core samples, and field observations of groundwater infiltration from the bedrock during test pit excavations in the lower tank farm area, the upper fractured bedrock is expected to be the primary groundwater conduit for horizontal flow at the site. This is particularly true in the Lower Tank Farm area where only a thin mantling of overburden materials is present and the groundwater table recedes into the bedrock during drier periods of the year.

7.22 Groundwater Flow Directions

Shallow groundwater flow at the site is expected to occur as a result of infiltration of incident precipitation and flow from topographically higher grounds on the eastern and western portions of the site towards the unnamed stream (a shallow groundwater discharge area) in the central portion of the site.

Shallow groundwater flow in the Upper Tank Farm area is predominantly in a west-southwest direction from the topographically higher ground off-site, through the Upper Tank Farm area towards the unnamed stream located in the central portion of the site. Similarly, shallow groundwater flow in the Lower Tank Farm area is inferred to be in west-southwest direction from the topographically higher ground off-site, through the Lower Tank Farm area towards Casco Bay and the unnamed stream.

Shallow groundwater flow in the southwestern portion of the site, near the landfill area, is inferred to be predominantly in a northeasterly direction towards the unnamed stream. Groundwater beneath the extreme southwest portion of the site, west of the till ridge, is inferred to flow west-northwest towards Casco Bay.

Shallow groundwater flow directions in the developed portions of the site are expected to be more complex due to the presence of catch basins, perforated and solid piping associated with the storm drain system, underground water and fuel lines, and the backfill surrounding underground lines. In the Lower Tank Farm area, portions of storm drain and fuel lines appear to have been placed in shallow bedrock trenches.

Groundwater in bedrock is expected to occur as a result of infiltration of incident precipitation along the crest of the Harpswell peninsula and flow west-southwest towards Casco Bay. It is expected that the nature and direction of groundwater flow in bedrock

is somewhat dependent of the morphology of the bedrock (i.e., topography of the bedrock surface and extent of fracturing).

Both downward and upward vertical gradients (based on potentiometric differences measured) between overburden and adjacent deeper bedrock monitoring wells were measured on site. However, comparison of the overburden and bedrock contour plans indicate that the potentiometric levels across much of the site are generally similar. The vertical gradients observed appear to be present primarily in topographically high areas, which would be expected to locally serve as recharge points, or at lower topographic positions, which would be expected to act as discharge points, such as near the unnamed stream. It is expected that the overburden and bedrock are hydraulically interconnected and function primarily as one water bearing unit. This is true in the Lower Tank Farm area were overburden deposits are thinner and the water table is observed to fluctuate across the bedrock surface.

7.30 QUALITY OF WATER, SOILS, AND SEDIMENTS

7.31 Soil Analyses and Extent of Contamination

Based on the results of PID and GC screening, and laboratory analyses, petroleum hydrocarbons were detected in soil samples collected from subsurface explorations in all fourteen tank areas and adjacent to the two pump houses in the Lower Tank Farm area. Low PID and GC headspace readings, and concentrations of total fuel oil below the method quantitation limit were also detected in several of the fenceline GeoProbe explorations located north of the Lower Tank Farm area. The most heavily impacted areas were detected to be tanks 1, 2, 3, 4, and 5 areas and pump house #2 in the Lower Tank Farm, and tanks 7, 8, 10, 12, 13 and 14 areas in the Upper Tank Farm.

Fuel oil range hydrocarbons were detected in twenty-seven of the forty-six soil samples submitted for analysis at concentrations ranging from 17 to 2,800 ug/g. Qualitative hydrocarbon identification in the fuel oil range identified petroleum products in the boiling range of fuel oils #1 and #4, and Jet A fuel (JP-5).

VOCs were detected in fourteen of the twenty-three soil samples submitted for analysis by EPA Method 8260. The VOCs detected include ethyl benzene, xylenes, isopropylbenzene, n-propylbenzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, sec-butylbenzene, p-isopropyltoluene, 1,1,1-trichloroethane, and n-butylbenzene. PAHs were detected in nine of twenty-one samples submitted for analysis by EPA Method 8270. The PAHs detected include acenaphthene, anthracene, benzo-a-anthracene, chrysene, fluoranthene, fluorene, 2-methylnaphthalene, 1-methylnaphthalene, naphthalene, phenanthrene, and pyrene. The greatest number of PAHs detected were found in soil samples collected from test pits in the Lower Tank Farm area.

PID and GC headspace screening results were observed to increase with depth and were typically highest for samples of weathered bedrock. Refusal on competent bedrock was encountered prior to encountering the vertical limits of petroleum hydrocarbon contamination in the Lower Tank Farm area. With the exception of the Tank 7 area, where overburden deposits are also quite thin, the vertical extent of petroleum hydrocarbon contamination in the Upper Tank Farm was limited to the relatively impermeable glacial till deposits.

In the Main Gate area, four soil samples, MG-2, MG-3, MG-11, and MG-18 exceeded the Maine DEP Decision Tree stringent clean-up goals for either total fuel oil (10 mg/kg) or total gasoline (5 mg/kg). Qualitative hydrocarbon identification in the fuel oil range suggested a petroleum product in the boiling range of #2 fuel oil/diesel fuel. Qualitative hydrocarbon identification in the gasoline range suggested a petroleum product in the boiling range of #1 fuel oil/jet fuel.

Total BTEX was detected in seven of the ten samples at concentrations ranging from 0.0011 mg/kg in the sample collected from MG-9 to 3.54 mg/kg in the sample collected from MG-2. Purgeable halocarbons were not detected above the method detection limit in any of the samples submitted for analysis. Lead was detected in all samples at concentrations ranging from 7.9 mg/kg to 13.5 mg/kg. The lead concentrations detected were generally within the reported range for lead in natural soils.

The contamination in the Main Gate area is inferred to extend over an area of approximately 90 by 120 feet and from approximately 3 feet below the ground surface to the top of bedrock (refusal) which was encountered at depths ranging from 8 to 17 feet below ground surface in the area of contamination. The average depth to bedrock (refusal) across the impacted area is estimated to be approximately 12 feet below ground surface.

7.32 Groundwater Analyses and Extent of Contamination

Monitoring wells in the Lower Tank Farm area in which total fuel oil was detected above the MEG of 50 ug/L include GT-3, GT-8, GT-17 and GZ-4 downgradient of the Tank 1 area, OGMW-24 located in the Tank 3 area, and OGMW-22 located in the Tank 5 area. The monitoring wells located in the Upper Tank Farm area where total fuel oil was detected above 50 ug/L are OGMW-15 and OGMW-17, located in or adjacent to the Tank 7 berm area. Main Gate area wells where total fuel oil was detected above 50 ug/L are GT-4G and MG-20.

VOCs were detected in groundwater samples at concentrations exceeding MCLs or MEGs in at least one sampling round from the following monitoring wells; GT-3 and GT-8, located near Tank 1, OGMW-22, located near Tank 5, GT-4G, MG-20, the facility bedrock water supply well in the Main Gate area, and OGMW-3, located near the former landfill.

SVOCs 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were detected in groundwater samples collected from monitoring wells, OGMW-15, OGMW-22, and GT-3. The concentration of naphthalene detected in all three wells exceeds the State MEG of 25 ug/L. No MCL has been established for naphthalene. Similarly, no MEGs or MCLs have been established for 1-methylnaphthalene and 2-methylnaphthalene.

7.33 Surface Water Analyses and Extent of Contamination

Hydrocarbons in the range of total fuel oil were detected above the Maine MEGs and the method quantitation limit of 50 ug/L during four of the six sampling rounds in surface water samples collected from monitoring point SW-8, located downgradient of the Tank 7 area. Hydrocarbons in the range of total fuel oil were also detected in samples collected from monitoring point SW-5 at concentrations below the method quantitation limit of 50 ug/L but above the practical quantitation limit for individual hydrocarbons of 10 ug/L. Surface water monitoring point SW-5 is located downgradient of Tanks 3 and 5 areas.

7.34 Sediment Analyses and Extent of Contamination

PAHs were detected above method detection limits in two of the twenty-four stream sampling locations, SS-14 and SS-18, at total PAH concentrations of 510 mg/kg and 45.17 mg/kg, respectively. Sediment sample SS-14 was collected from the stream/drainage channel located between Tank 14 and the main road and sediment sample SS-18 was collected from the stream/drainage channel which transports stormwater from tank berms in the Upper Tank Farm area to the unnamed stream on site.

Arsenic concentrations in samples SS-12 and SS-13, at concentrations of 73.3 and 14.8 mg/kg, respectively, exceed the Maine Sediment Classification Class I guideline of 7 mg/kg. The lead concentration in sample SS-17 exceeds the Class I guideline of 83 mg/kg. The Maine Sediment Guidelines are used as regulatory benchmarks for the disposal of dredge spoils.

PAHs were detected above the method detection limit in one of the three sediment samples, SS-33, collected from the on-site oil/water separators. Nine PAH compounds were detected at a total concentration of 100.5 mg/kg. Arsenic, barium, chromium, and lead were also detected above the method detection limit in one or more of the oil/water separator sediment samples.

PAHs were detected in two of the six tidal zone sediment samples collected, SS-29 and SS-30, at total PAH concentrations ranging from 81.6 mg/kg to 75.7 mg/kg, respectively. Sediment samples SS-29 and SS-30 were collected from the subtidal zone adjacent to the terminal pier. PAHs were not detected in any of the four sediment samples collected from the inter-tidal zone beach area.

7.35 Residential Water Supply Results

Total fuel oil and SVOCs were not detected above the method detection limits in any of the water samples collected from residential wells in either the January or August 1995 sampling rounds. No VOCs, with the exception of methylene chloride, were detected in any of the water samples collected from residential wells in either of the two sampling rounds. The presence of methylene chloride in samples from the January sampling round is believed to be related to sample container preparation as it was detected in laboratory trip blanks prepared in the laboratory prior to sampling as well as in several residential samples.

7.40 PRELIMINARY HUMAN EXPOSURE PATHWAY ASSESSMENT

Pathway completion for exposure through direct contact and incidental ingestion is possible due to the presence of contaminated groundwater, surface water, soil and sediments on-site. Because direct contact and incidental ingestion pathways involve media located within the bounds of the DFSP property, with the exception of contaminated marine sediments, pathway completion would be dependent upon the presence of trespassers to the site and utility/construction workers on-site. Exposure to deep water marine sediments is considered unlikely as the sediments are located beneath approximately thirty feet of water.

Pathway completion for exposure is possible through fugitive dust emission from contaminated soil. However, due to the largely vegetated nature of the surficial soils at the site and the large physical distance between areas of contaminated surficial soils and local residences, potential exposure through this pathway is thought to be unlikely.

8.00 RECOMMENDATIONS

On the basis of the findings and conclusions presented in the preceding sections, and keeping with the overall goal of closure of DFSP in a manner which will comply with federal, state, and local requirements, GZA offers the following recommendations.

8.10 WATER QUALITY MONITORING PROGRAM

GZA recommends that a water quality monitoring program continue for 1996 to provide for a combination of "detection monitoring" at fenceline monitoring well locations, and "tracking monitoring" at a limited number of wells located in interior portions of the site. At a minimum the monitoring program should consist of biannual sampling and analysis for BTEX and Total Fuel Oil compounds of the fenceline monitoring points and selected wells located in interior portions of the site. A proposal detailing the proposed sample locations and frequency has been submitted to DEP. We are currently awaiting approval to proceed with the monitoring program.

8.20 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

GZA recommends that a risk assessment be conducted to evaluate the level of human health and ecological risk associated with current and potential uses of the property. The results of the risk assessment will be used to identify areas and/or levels of contamination warranting remediation to limit the risk to human health and the environment. A proposal detailing the methodology to be used has been submitted to the DFSC and DEP.

8.30 HAZARDOUS MATERIALS SURVEY

GZA recommends that a hazardous material survey be performed at DFSP prior to dismantling/demolition activities associated with the above-ground storage tanks and piping system. The objective of this survey would be to determine whether hazardous, or potentially hazardous, materials exist within, or are an integral part of, the existing structures at DFSP. The first phase of the hazardous materials survey has been completed and we are currently awaiting approval to proceed with the second phase.

8.40 BIOTREATABILITY STUDY

GZA recommends that a bioremediation feasibility study be performed. The purpose of this study would be to evaluate whether intrinsic or enhanced biodegradation is technically feasible for remediating petroleum contamination in the unsaturated/saturated zones and to determine the extent to which biodegradation may be occurring at the DFSP site. The primary objective would be the reduction of petroleum hydrocarbons concentrations in the unsaturated and saturated zones to below target cleanup levels established as part of the risk assessment and negotiations with the Maine DEP. The biotreatability study will consist of field screening for biodegradation indicator parameters, microbial enumeration, and respirometry/mineralization testing of soil and groundwater samples from the site. We are currently scheduling the field work associated with the biotreatability study.

BIOFEASIBILITY STUDY
DFSP CASCO BAY FACILITY
SOUTH HARPSWELL, MAINE
CONTRACT NO. DLA600-93-C-5342
TASK ORDER ACO-0012

PREPARED FOR:
Defense Fuel Supply Center
Fort Belvoir, Virginia

PREPARED BY:
GZA GeoEnvironmental, Inc.
Manchester, New Hampshire

October 1996
File No. 25187.11

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clay content may have limited the extent to which spiking the soils with fresh JP-5 distributed PHCs uniformly such that samples collected at the end of the study were not representative. Even so, the respirometry data indicated biodegradation was not important. Reasons for the limited biodegradation include the following:

- Clay content reduces the availability of PHCs to native bacteria via sorption and restricts oxygen re-supply to indigenous microbes; and/or
- Because microcosms were spiked with fresh JP-5, indigenous microbes may not have had sufficient time to acclimate to the new substrate.

These results indicate that neither intrinsic or enhanced bioremediation were effective in removing contaminant mass during the study. Refer to the attached Technical Memorandum for additional information on the saturated zone microcosm study.

CONCLUSIONS/RECOMMENDATIONS

UNSATURATED ZONE

Based on field screening, microbial enumeration, and microcosm study data, intrinsic bioremediation is occurring within the unsaturated zone at the site and may be effective for low to moderately contaminated soils at relatively shallow depths where oxygen re-supply is not limited by pneumatic permeability; however, intrinsic bioremediation is severely limited for heavily impacted soils where pneumatic permeability restricts oxygen re-supply and anaerobic conditions persist.

Enhanced bioremediation via oxygen amendment is effective for reducing BTEX and naphthalene concentrations by both volatilization and biodegradation, but may be limited for reducing TPH concentrations to less than about 10^3 ppm. TPH removal beyond this apparent lower limit may be enhanced by moisture and/or inorganic nutrient amendment, but would need to be further evaluated. Based on microcosm study results, the efficacy of enhanced bioremediation is dependent on target remedial goals to be established for TPH, as BTEX and naphthalene appear to readily be attenuated by aeration.

GZA recommends, at the conclusion of the risk assessment, the performance of a pilot study to evaluate aeration options and possible moisture/nutrient amendment requirements. Based on our current understanding of site conditions, GZA believes that a biopile or land treatment strategy may be suitable for treatment of impacted soil from the site. GZA also recommends installation of permanent soil gas monitoring wells at the site at locations where soil PHC concentrations exceed to-be-established target remedial goals to evaluate intrinsic bioremediation occurring in these soils.

SATURATED ZONE

Based on the field screening and microbial enumeration data, intrinsic bioremediation is occurring within the saturated zone at the site. Importantly, DO concentrations in many of the monitoring wells sampled within contaminated groundwater locations are not entirely depleted, suggesting a combination of recharge events and groundwater flow from oxygen-rich background areas may provide sufficient oxygen loading to satisfy the oxygen demand thereby limiting migration and attenuating dissolved/adsorbed-phase contamination once the source (highly contaminated soils) is removed. Although the results of the respirometry/mineralization study indicated biodegradation was not important for the samples used in the microcosms, the study was performed using formation samples which contained very low PHC concentrations. This indicates saturated zone contamination, at these locations, is principally dissolved and not adsorbed (residual), suggesting that residual contamination is localized spatially, consistent with the conceptual model of contaminant distribution developed in GZA's April 1996 Hydrogeologic Assessment for the site. This is important, as residual contamination poses a continuing source for dissolved-phase contaminants and poses a continuous oxygen demand on the groundwater system.

Based on the localized extent of residual contamination in the saturated zone, the relatively high DO concentrations within both contaminated and background locations, and the aerobic biodegradation currently occurring, GZA believes that intrinsic bioremediation may be a viable remedial option for the overburden groundwater system at the site. Because recharge of contaminated overburden groundwater is the source of contamination in the bedrock groundwater system at the site, intrinsic bioremediation of overburden groundwater is expected to treat bedrock groundwater as increasingly oxygen-loaded groundwater recharges bedrock. In the bedrock groundwater system, biodegradation is expected to be more important within the weathered zone than within competent bedrock due to increased surface area for microbial attachment and may be limited in areas where residual product is trapped due to PHC cytotoxicity and/or oxygen limitation.

To monitor intrinsic bioremediation currently occurring at the site, GZA recommends supplementing the on-going groundwater monitoring program to include nitrate, sulfate, dissolved iron/manganese, methane, DO, Eh, and microbial enumerations to monitor ongoing intrinsic bioremediation processes at the site.

TABLES

We look forward to continuing to work with you on this important project. Please call us should you have any questions or require additional information regarding this letter report.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

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Technical Specialist, II

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Program Manager

IRS/JRG/WFL:is/tmd
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Attachments: Work Plan
Limitations
Tables
Figure
Soil Gas Respirometry Survey Results
Total Recoverable Heterotroph Plate Counts
Respirometry/Mineralization Studies

cc: Mr. Stephen Deatherage, DFSC-FQ

Feb 97

ENVIRONMENTAL BASELINE SURVEY
DEFENSE FUEL SUPPORT POINT
CASCO BAY FACILITY
SOUTH HARPSWELL, MAINE

PREPARED FOR:
Defense Fuel Supply Center
Fort Belvoir, Virginia

PREPARED BY:
GZA GeoEnvironmental, Inc.
Portland, Maine

February 1997
File No. 25187.12

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The residential water supply wells sampled in January/February 1995, August 1995, and May/July 1996 are listed in Tables 9, 10, and 11, respectively. Total fuel oil and SVOCs were not detected above the method detection limits in any of the water samples collected from residential wells with the exception of fuel oil detected at concentrations near the detection limit in samples collected from the Knight Sr. residence, located adjacent to the Main Gate entrance, and the two naval housing units. Resampling of these three wells in July 1996 did not indicate the presence of fuel oil above the method detection limit.

No VOCs, with the exception of methylene chloride, were detected in any of the water samples collected from residential wells in either of the three sampling rounds. The presence of methylene chloride, a common laboratory solvent, is believed to be related to sample container preparation as it was detected in laboratory trip blanks prepared in the laboratory prior to sampling as well as in several residential samples.

5.00 CONCLUSIONS

5.10 PROPERTY CATEGORIZATION

Based on GZA's analysis of available data as summarized in Section 3.0, we have categorized the Site as shown on Figure 4. A summary of our categorization of the facility property is as follows:

Category 1 - Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).

- Undeveloped portions of the Site which are largely wooded.
- The northwest corner of the Site north of the BNAS storage building (Building 130) and the facility garage (Building 158).

Category 2 - Areas where only storage of hazardous substances or petroleum products has occurred, but no release, disposal, or migration from adjacent areas has occurred.

- Areas that USTs 1, 5, 6, 7, 9, 11, 12, 13 and 14 were formerly located in.
- Building 129 (Maintenance), Building 130 (BNAS Storage), Building 158 (Garage), Building 159 (Generator Building), Building 160 (Separator House), and the upper foam valve house where hazardous materials or petroleum products were stored.
- The transformer pads next to Buildings 159 and 161 where PCB-containing transformers are located.
- The area along the southern perimeter road where sandblasting grit was stored.

Category 3 - **Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but at concentrations that do not require a removal or remedial action.**

- The two former drum storage areas located in the southeastern quadrant of the Site.

Category 4 - **Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken.**

- The area where the former UST 10 was located.
- The fuel transfer pier.

Category 5 - **Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are under way, but all required remedial actions have not yet been taken.**

- The majority of the developed tank farm area inclusive of the 14 AST berms, former fuel pipeline locations, and areas downgradient of the tank berm and fuel line location where petroleum products have migrated to.

Oiled-sand from beneath the 14 ASTs and petroleum saturated soils from subsurface pipeline areas have been excavated and treated on-Site using a cold-mix asphalt batching process. Remediation of remaining petroleum impacted soils and groundwater may be required depending upon risk-based cleanup goals to be negotiated with the DEP based on the Site-specific risk assessment.

- Building 126 (Administration) where petroleum products have migrated to and loose and broken asbestos-containing floor tiles are present.

Category 6 - **Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been implemented.**

- The Main Gate area.

Category 7 - **Areas that are unevaluated or require additional evaluation.**

- The subtidal zone sediments in the vicinity of the fuel transfer pier.
- Stream sediments in the vicinity of sediment sample locations SS14 and SS18.
- Sediments within oil/water separator No. 5.

5.20 PROPERTY CATEGORIZATION MAP

A Property Category Map is presented as Figure 4. These property zones reflect the findings of the EBS for the DFSP facility, as discussed in Section 3, including identification of areas considered uncontaminated based on the requirements of CERCLA Section 120(h).

5.30 DATA GAPS

In reviewing the available data for this EBS to develop our conclusions regarding the Property, GZA identified the following data needs to fill gaps in the available Site characterization data:

1. Further evaluation of the subtidal zone sediments in the vicinity of the fuel transfer pier to assess the extent of contamination;

2. Further evaluation of the stream sediments in the vicinity of sediment sample locations SS14 and SS18 to assess the extent of contamination;

3. Further evaluation of the surficial soils within the 14 tank berms to assess the vertical and horizontal extent of lead contamination;

4. Additional sampling of soils for fuel oil and/or VOCs may be required to determine areas which will require remedial actions to achieve cleanup goals to be established for the Site. Much of the data gathered on soils to date to define areas of contamination has been at a screening level rather than based on laboratory analyses. Additional characterization based on laboratory analyses could result in portions of the Site being re-categorized from Category 5 to Category 3, depending upon the cleanup goals set.

Data needs identified under items 1, 2, and 3 above, are currently being addressed by DFSC and GZA under Task Order ACO-0005, Modification 03. The information gathered under this task order will be used to update the EBS, if warranted. The need for gathering additional data identified under item 4 will be assessed based on the results of negotiations with the Maine DEP in regards to the Site-specific risk assessment.

HYDROGEOLOGIC INVESTIGATION
FORMER SOLID WASTE/
DEMOLITION DEBRIS LANDFILL
DEFENSE FUEL SUPPORT POINT
CASCO BAY TERMINAL
HARPSWELL, MAINE

PREPARED FOR:
Defense Fuel Supply Center
Ft. Belvoir, Virginia

PREPARED BY:
GZA GeoEnvironmental, Inc.
Portland, Maine

June 1997

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(i.e., non-enforceable guideline) at two locations. All of these constituents are naturally occurring and may exceed standards because of natural seasonal variations rather than landfill-related impacts.

6.2.3 Pesticides and PCB

Groundwater and surface water samples collected from the landfill area during the June 1996 sampling round were analyzed for PCBs and selected chlorinated pesticides, including lindane, heptachlor, aldrin, dichlorodiphenyl trichloroethane (DDT), and chlordane. As shown in Table 5C, these compounds were not detected in any of the samples that were analyzed.

6.2.4 Total Fuel Oil

Results of fuel-related analyses, including total fuel oil (Maine DEP Method 4.1.1) and purgeable aromatic compounds (EPA Method 8020) are presented in Table 5D, along with field-screening results for pH, specific conductance, and temperature.

Total fuel oil was detected in several wells at trace concentrations (below method quantitation limit) in samples collected in 1994. Concentrations of total fuel did not exceed applicable federal or State of Maine regulatory thresholds.

6.2.5 Field-Screening Parameters

Field-screening parameters, including pH, specific conductance, and temperature, were within ranges expected for non-impacted groundwater and surface water. Field-screening parameters for wells located downgradient from the landfill do not vary significantly from those measured for background (upgradient) wells.

6.3 RESULTS OF GZA SURFACE WATER QUALITY ANALYSES

Surface water samples from sampling stations SW-1, SW-2, SW-3, and SW-1A were analyzed for total fuel oil by Maine DEP Method 4.1.1; purgeable aromatic compounds (BTEX) by EPA Method 8020; purgeable halocarbons by EPA Method 8010; and field-screening parameters (pH, specific conductance, temperature) during ten sampling rounds from 1994 through 1997. No detectable concentrations of fuel oil or VOCs were measured at these locations, and field-screening parameters were within expected ranges for non-impacted surface water.

7.0 CONCLUSIONS

A hydrogeologic investigation was performed of the DFSP landfill site in South Harpswell, Maine. The landfill area is located in the southwest portion of the facility, about 600 to 700 feet east of Casco Bay and about 50 feet north of the DFSP southern property boundary. The abutting properties to the south consist of privately held land which is currently wooded, undeveloped and topographically higher than the landfill area. The objectives of this investigation were to gather

supplemental information to characterize and assess hydrogeologic conditions at the landfill; evaluate impacts, if any, to groundwater and surface water quality; estimate the horizontal and vertical limits of solid waste; and develop alternatives for permanent closure. Based on the exploration, sampling, screening, and laboratory testing programs completed as part of this investigation, the following conclusions are made:

1. Subsurface conditions consist of solid waste materials overlying glacial till in the southern two-thirds of the landfill area and solid waste overlying glaciomarine sand, silt, and clay overlying glacial till in the northern one-third of the landfill area. The thickness of the glacial till unit varies from approximately 60 feet below the southern end of the landfill to approximately 40 feet below the northern end of the landfill. The glaciomarine deposits range in thickness from 0 to approximately 10 feet below the solid waste material, and overlie or interfinger with the glacial till. The depth to bedrock in the vicinity of the landfill ranges from about 30 to 60 feet.

2. Solid waste materials were observed to consist predominantly of soil, large rocks (cobbles to boulders), stumps, and organic detritus (peat, leaves, roots), which comprise approximately 75% of the solid waste materials present. Other solid waste materials observed include construction debris, including concrete and masonry debris, steel cables, other building debris, possible residual sludge material, and empty 5-gallon metal containers. Empty, rusted drums were observed on the ground surface on an embankment along the northern boundary of the landfill, but were not encountered in test pit excavations within the landfill.

3. Shallow groundwater flow beneath the landfill is in a predominantly northeasterly direction towards the unnamed stream. However, groundwater beneath the extreme southwest portion of the landfill area could flow in a northwesterly direction towards Casco Bay. Based upon water levels measured in bedrock wells OGMW-2B and GZ-2, the landfill is inferred to be located in a recharge area with vertical downward components of flow through glacial till towards bedrock. Groundwater flow in deep bedrock is expected to reflect a more regional pattern of groundwater flow towards the west and Casco Bay.

4. The highest water level elevations have consistently been measured in monitoring well OGMW-2, located in the eastern portion of the landfill area. Water levels at this monitoring point ranged from elevation 64.4 feet MSL on May 9, 1994 to elevation 60.9 feet MSL on August 21, 1995. The approximate elevation of the bottom of fill at this location is about 63.7 feet MSL, indicating that the shallow water table is seasonally within the waste in a portion of the landfill. Well GZ-16, located just outside the landfill area approximately 50 feet southeast of OGMW-2, shows similar water levels (61.5 to 61.7 feet above MSL during two monitoring rounds in June and September 1996) and supports the conclusion that the seasonal high water table is in contact with the waste material in the southeastern portion of the landfill.

5. VOCs were not detected in any of the 14 soil samples analyzed by GZA. SVOCs, including polynuclear aromatic hydrocarbons (PAHs) and bis(2-ethylhexyl)phthalate, were detected in a soil sample collected from a 4-foot depth in test pit GZTP-8. This test pit is within the reported former incinerator area within the landfill. Bis(2-ethylhexyl) phthalate

was also detected in samples from several other test pits. This compound is widely used in plastics and thus is commonly detected as a sampling artifact in environmental analyses. TCLP metals analyses of soil samples showed non-detectable levels of six of the eight metals for which RCRA standards have been established. Measurable concentrations of barium were detected in all of the 13 selected test pit samples, and cadmium was detected in the sample from test pit GZTP-8; however, the detected concentrations were well below applicable RCRA standards. Pesticides and PCBs were not detected in any of the 14 samples collected and analyzed by GZA, with the exception of test boring GZ-15, where the PCB Arochlor mixture 1242/1016 was detected at 42 ug/kg. This result appears to be an isolated occurrence, and the measured concentration is below applicable cleanup thresholds for PCBs.

6. VOCs were not detected at the newly installed or existing groundwater monitoring wells sampled during the 1995 through 1997 groundwater sampling programs with the exception of toluene at 4.8 ppb in monitoring well GZ-16. The SVOC compound di-n-butylphthalate was detected during one sampling round from each of the newly installed wells GZ-14, GZ-15, and GZ-16 and benzoic acid was detected in GZ-16. Di-n-butylphthalate and benzoic acid are plasticizers and their presence is believed to be related to the installation of the new GZ-series wells in the landfill area. No VOCs or SVOCs were detected at the three surface water monitoring points sampled during these monitoring rounds. VOCs were previously detected in four of the eleven monitoring wells sampled. Trichloroethene and tetrachloroethane were detected at concentrations slightly above applicable MCLs and Maine MEGs in one or both of the samples collected from monitoring wells OGMW-1 and OGMW-3 during September 1, 1994. Sampling conducted by O'Brien & Gere in October 1990 found low concentrations of 4-isopropyltoluene, tetrachloroethane, and toluene in a sample from OGMW-1 and OGMW-3, and a low concentration of trichlorofluoromethane in a sample collected from well OGMW-5. Trace levels of ethyl benzene and xylenes were also detected in a sample collected from well OGMW-3 in November 1994. PCBs and chlorinated pesticides were not detected in groundwater and surface water samples collected from the landfill area during the June 1996 and April 1997 sampling rounds. No metals, cations, or anions were detected at levels exceeding applicable regulatory thresholds with the exception of iron and manganese, which periodically exceeded secondary (i.e., non-health-based) MCLs at several locations, and sodium, which exceeded an MCL goal at two locations.

7. Based on the results of this hydrogeologic investigation, as discussed above, the presence of the solid waste landfill is not adversely impacting soil, groundwater, or surface water quality in the area of the landfill.

8.0 RECOMMENDATIONS

Based on the findings of the hydrogeologic investigation of the landfill, GZA provides the following recommendations for closure of the landfill. Our recommendations are presented in the context of the applicable State of Maine solid waste regulations, as discussed below

8.1 REGULATORY SETTING

The landfill occupies an area of about three acres and contains several types of waste materials. About 75 percent of the landfilled materials consist of soil, large rocks and vegetative debris. Most of the remaining portions of the waste consists of construction and demolition debris. In addition, small quantities of incinerator ash and material thought to be residuals from tank bottom sludge were observed in portions of the landfill disposal area. All of these materials are considered by the State of Maine to be "solid waste" in accordance with definitions provided in the Maine Solid Waste Rules (06-096 CMR, Chapter 400).

Chapter 404 of the Solid Waste Rules specifically addresses disposal of construction and demolition debris, inert fill (soil, concrete, brick, ect.), land clearing debris (stumps, brush, ect.), and woodwaste. These rules apply to landfills ranging in size from one to six acres. Tank bottom sludge and incinerator ash are defined as "special waste" by the Maine Solid Waste Rules, and disposal of these wastes is regulated under Chapter 405 (Management, Testing, and Disposal of Special Wastes) and Chapter 401 (Landfill Disposal Facilities) of the Rules. DEP could consider a landfill containing these mixed wastes to be regulated under the much more stringent rules for closure under Chapters 401 and 405.

The DSFP landfill does not have a permit to operate or close, and the landfill became inactive well before the current solid waste rules were implemented. In instances such as these, DEP has been applying the current rules to closure of unlicensed facilities that were closed or abandoned prior to the effective beginning date of the rules (August 1989).

8.2 RECOMMENDATIONS FOR LANDFILL CLOSURE

GZA recommends that DSFP close the landfill in accordance with the less rigorous Chapter 404 rules. We believe this closure strategy satisfies applicable regulatory requirements, as discussed below. In addition, we believe the Chapter 404 closure requirements would adequately protect the environment and human health and safety, considering the results of the analytical testing completed to date which indicate the landfill is not adversely impacting soil or groundwater quality.

As indicated above the landfill has a history of accepting mixed wastes, a small portion of which could require that the landfill be closed under Chapter 401 rules. Extensive testing of the ash and sludge, however, indicate these materials are inert and pose no threat to groundwater and surface water quality.

Historical information indicates the ash was disposed in the vicinity of the former incinerator and the sludge was disposed in a trench located northwest of the incinerator. We excavated approximately 22 test pits in and immediately adjacent to these areas at the locations shown on Figure 2. Based on our observations, we were able to delineate the horizontal and vertical limits

of ash and materials thought to be the residuals from tank bottom sludge. Test pits excavated in the remaining areas of the landfill did not encounter ash or sludge. These findings are consistent with historical information indicating the ash and sludge were landfilled at specific locations that were segregated from, rather than mixed with, the other waste streams.

DEP regulations [06-096 CMR 404.4(B)(2)] for landfills subject to Chapter 404, "Construction/Demolition Debris, Inert Fill, Land Clearing Debris," require the applicant to provide a closure plan to DEP for review and approval. Closing requirements are specified in 06-096 CMR 404.5.(H), as follows:

> "All solid waste facilities subject to the requirements in this Chapter shall be graded, covered with soil suitable to grow vegetation and seeded with an effective ground cover within one growing season of the completed disposal. Additional, more specific, closure requirements will depend on waste, site, and operational conditions."

In consideration of our findings and the applicable regulations, GZA provides the following recommendations for permitting, closure design, and closure construction to be incorporated into the landfill closure plan:

- Delineate wetlands in the immediate vicinity of the site. Based on our observations, it is possible that regulated wetlands may be present along the northerly limits of waste. Working in or adjacent to regulated wetlands requires State, and possibly local, permits.
- Remove bulky debris observed along the northerly toe of the landfill, and dispose of this material off-site in a licensed solid waste landfill.
- Regrade (steepen) the ash and sludge disposal areas as needed to achieve minimum slopes of 5 percent, and to promote dispersion of storm water as "sheet flow" downgradient of the landfill.
- Place soil as necessary to provide 18 inches of cover over any exposed waste resulting from removal of bulky debris or regrading of the ash and sludge disposal areas. Place six inches of topsoil and seed over all disturbed areas.
- Provide a stone toe drain along the northerly limit of waste to dissipate seepage pressures that will likely exist due to the shallow groundwater table observed in this area.
- Amend the property deed to, in perpetuity, notify any future property owner of the presence of a solid waste landfill on the site.
- Prepare a post-closure groundwater and surface water monitoring program. Given the limited impacts the landfill has had on groundwater and surface water quality to date, the program should include analyses for only selected parameters, over a period of two years. If the results of post-closure monitoring continue to indicate the landfill is not

significantly impacting water quality at the end of the two-year period, it may be appropriate to end the monitoring program at that time.

Chapter 404 closure requirements indicate landfills should be graded, presumably to promote runoff and limit ponding of water over the waste. Existing topography within the main body of the landfill (excluding the ash and sludge disposal areas) is shaped to promote runoff, with grades ranging from about six percent on the top flatter portion of the landfill, to about 2 horizontal to 1 vertical along the northerly limits of the landfill. Regrading of the landfill, therefore, is not necessary.

In addition, the applicable rules include requirements to "establish an effective ground cover," presumably to provide a stable long-term cover that is resistant to erosion or other mechanisms that could result in exposed waste in the future. The existing cover in the main body of the landfill consists of a vigorous growth of grass and emergent woodlands. This area would not be regraded as discussed above, and the existing vegetation appears to meet the intent of the regulations; therefore, revegetating this area is not necessary.

SOIL LEACHABILITY STUDY
DEFENSE FUEL SUPPORT POINT
CASCO BAY TERMINAL
HARPSWELL, MAINE

PREPARED FOR:
Defense Fuel Supply Center
Fort Belvoir, Virginia

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December 1997
File No. 25187.91

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concentrations for elapsed time near 95 years, it is apparent that the $C_{max\ 15,0,0\ ave}$ for naphthalene would be significantly greater than its MEG. The $C_{max\ 15,0,0\ ave}$ estimate at 95 years was 460 µg/L and increasing, while the MEG for naphthalene is 25 µg/L.

GZA "back-calculated" the soil concentrations that result in groundwater concentrations equal to the MEGs for ethylbenzene and naphthalene. The model results indicated that dissolved concentrations in groundwater would be approximately equal to the ethylbenzene MEG (700 ug/L) for an initial soil concentration of 3.15 mg/kg, and the naphthalene MEG (25 ug/L) for an initial soil concentration of 10 mg/kg. Ethylbenzene was detected at a concentration greater than 3.15 mg/kg in only one sample (LS-T8-1, S-2) of 29 samples analyzed during this study. Naphthalene was detected at a concentration greater than 10 mg/kg in only three samples (LS-T7-2, S-4; LS-T8-1, S-1 and S-2).

Similar "back-calculations" were not performed for total xylenes, because the results of the existing conditions simulations indicated that the detected concentrations for total xylenes do not significantly impact groundwater quality by leaching, and because the Baseline Risk Assessment did not indicate total xylenes as a contaminant of concern.

Modeling of DRO with the surrogates n-nonane and pyrene under the existing conditions scenario yielded the simulated appearance of free phase product in soil moisture at very low initial soil concentrations due to the low volatility and solubility of the surrogates. Ignoring co-solvency effects, the simulated maximum DRO concentration in soil moisture for both Profiles 2 and 3 is equal to the sum of the surrogate solubilities, which is 352 µg/L.

To calculate DRO groundwater concentrations at and below the water table at a hypothetical receptor, dilution factors calculated from the SESOIL/AT123D results for VOCs were applied to the SESOIL-simulated dissolved DRO concentrations in soil moisture (C_{max}). For the C_{max} of 352 µg/L, the calculated dissolved DRO concentration in groundwater at the water table, assuming a dilution factor of 3, is 117 µg/L; and the average concentration below the water table, assuming a dilution factor of 6, is 59 µg/L, which is approximately equal to the 50 µg/L stringent cleanup standard.

GZA back-calculated the DRO soil concentrations for which SESOIL simulates the appearance of free phase product. As discussed above the dissolved DRO concentration in soil moisture associated with the simulated appearance of free product results in a dissolved DRO concentration below the water table of 59 µg/L (using a dilution factor of 6) that is approximately equal to the stringent cleanup standard of 50 µg/L. Assuming organic contents of 0.5 percent (approximate average OC for all samples analyzed) and 0.91 percent (approximate average OC for samples collected at LS-T7-2), these calculations resulted in DRO soil concentrations of 80 mg/kg and 150 mg/kg, respectively.

6.3 CONCLUSIONS

Based on the findings of this leachability study and associated subsurface investigations, GZA concludes that the VOCs identified by the baseline risk assessment as contaminants of concern are not present in on-site unsaturated zone soils at concentrations that significantly impact groundwater quality. Although the analytical laboratory results for groundwater samples collected from seven monitoring wells during routine groundwater monitoring indicate exceedances of groundwater standards during one or more sampling events, GZA believes that,

based on the currently available soil and groundwater data, these exceedances are the result of localized sources that do not contribute significantly to degradation of site-wide groundwater quality.

Of more significance to site-wide groundwater quality is the presence of DRO in the soil near or below the water table and, to a lesser extent, the presence of DRO in soil above the water table. Results of the current study predict that leaching of the DRO in soil and subsequent dilution within the aquifer will cause groundwater contamination at levels between about 59 and 117 µg/L, which are approximately within one order of magnitude of the MEG for fuel oil of 50 µg/L. Actual DRO concentrations detected in groundwater in or immediately downgradient of areas of known soil contamination are similar or higher than predicted, and range from 53 µg/L to 1,200 µg/L. The reason for this discrepancy is likely due to the presence of high concentrations of DRO at and below the water table, which could not be included in the leaching study model, as well as due to model limitations imposed by representation of DRO by surrogates.

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TABLES

ON-SITE COLD-MIX ASPHALT RECYCLING REPORT DEFENSE FUEL SUPPORT POINT CASCO BAY, MAINE

PREPARED FOR:
Defense Energy Support Center
Fort Belvoir, Virginia

PREPARED BY:
GZA GeoEnvironmental, Inc.
Manchester, New Hampshire

March 1998
File No. 21649.8
Task Order ACO-0018

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FIGURES

2.2 AST DISMANTLING AND REMOVAL

AST and fuel pipeline dismantling and removal was completed between April 11, 1996 and July 12, 1996. Fourteen ASTs, consisting of six 50,000 bbl ASTs and eight 80,000 bbl ASTs, were dismantled and removed from the Site. A total of approximately 3000 tons of steel and 150 tons of aluminum from the ASTs was removed from the Site and transported to various facilities for recycling.

2.2.1 Sand Layer Removal and Sampling

Laboratory test results of a composite sample of the oiled-sand layer obtained from beneath the floor of AST-14 indicated that the sample exhibited the presence of petroleum hydrocarbons, metals, and polynuclear aromatic hydrocarbons (PAHs). The characteristics of the hydrocarbon chromatogram indicated the presence of two petroleum products. The first petroleum product was in the boiling point range of Fuel Oil No. 4 and constituted approximately 10 percent of the total petroleum hydrocarbon content. The second petroleum product was in the boiling range of Motor Oil and constituted approximately 90 percent of the total petroleum hydrocarbon product. The characteristics of the hydrocarbon chromatogram and the presence of metals and PAHs suggest that the oily sand layer may have originated from applying a waste oil mixture to the sand to create "oiled-sand."

Based on this assumption, the resulting mixture (i.e., waste oil and sand) would be regulated in the State of Maine under Chapter 860, the *Waste Oil Management Rules* (the Rules). In accordance with the Rules, the waste oil mixture must be further evaluated to determine whether the mixture exhibits Resource Conservation and Recovery Act (RCRA) hazardous waste characteristics. If the mixture does exhibit RCRA hazardous waste characteristics, then it is subject to regulation under Chapter 850, *Hazardous Waste Management Rules*. If the mixture does not exhibit RCRA waste characteristics, then Department of Environmental Protection (DEP) generally allows it to be managed consistent with alternatives for management of virgin petroleum contaminated soil.

RCRA characterization of the oiled sand from beneath each of the ASTs was performed on composite samples collected throughout each sand layer and included the following laboratory analyses:

- Corrosivity using Environmental Protection Agency (EPA) Method 9045;
- Reactivity (cyanide and sulfide) using Method SW-846,7;
- Flashpoint using EPA Method 1010;
- Toxicity Characteristic Leaching Procedure (TCLP) for eight RCRA metals using EPA Method 1311;
- TCLP for semi-volatile organic compounds using EPA Method 8270;

- TCLP for volatile organic compounds (VOCs) using EPA Method 8240;
- TCLP for herbicides and pesticides using EPA Method 8080; and
- Total Fuel Oil using DEP Method 4.1.2.

The test results for oiled-sand samples indicate that the mixture does not exhibit RCRA waste characteristics. Based on these results, the oiled-sand from each AST location was excavated and stockpiled (approximately 5000 cubic yards) within AST-12 tank berm. The oiled-sand was placed on top of two layers of 6-mil polyethylene sheeting and covered with one layer. The laboratory analytical results for the oiled-sand is summarized on *Table 1*. The laboratory data reports are provided in *Appendix D*.

2.2.2 Gravel Fill Layer

In test pits performed within each tank area, a gravel fill layer was encountered under the oiled-sand layer. The gravel fill appeared to be placed in thicknesses in general conformance with tank foundation specifications[1]. Typically, within a tank ring wall about 2.5 feet of gravel fill was encountered over natural glacial till (previous excavation surface), or about 1 foot of gravel fill was encountered over bedrock. Gravel fill was also encountered outside the tank ring walls to near ground surface. According to specifications, the gravel fill was compacted in 8- to 12-inch-thick layers.

GZA composited gravel fill soil samples for analysis of Fuel Oil by Modified Maine DEP Method 4.1.2. One composite sample was prepared for each tank, and consisted of gravel fill from each of the four test pits performed within the tank ring wall. The analytical results for these samples are summarized on *Table 2*, and ranged from Below the Method Quantitation limit to 6,200 ppm. The gravel fill was not removed for treatment.

2.3 PIPELINE DISMANTLING AND REMOVAL

Fuel pipelines were exposed by excavation of overlying soils in discrete sections along the pipeline corridors. Pipeline excavation was generally performed by starting on pipeline sections located in topographically high locations (upper tank farm area) and proceeding to topographically low locations (lower tank farm area) to allow for draining of any residual product in the pipelines. The pipeline was then cut with mechanical shears, lifted from the excavation, and staged for removal of the asbestos containing wrap found on all subsurface pipelines. A total of 22,390 linear feet of fuel pipelines, together with associated pumps and valves, were dismantled and removed from the Site.

[1] Plan entitled "AVGas & Jet Fuel Storage Facilities; 50,000 BBL, Floating Roof Type Storage Tank; Sheet 123 of 171," Y & D Drawing No. 573118, dated August 7, 1952.

2.3.1 Excavation/Soil Screening and Sampling

Soil samples were collected in duplicate from below the pipeline at approximately 20-foot intervals along the excavation and screened on site using a photoionization detector (PID). Approximately ten percent of the duplicate soil samples collected were submitted for total fuel oil analyses by Maine Method 4.1.2. The laboratory analytical results for the soils collected adjacent to the pipeline during excavation are summarized on *Table 3*. The laboratory data reports are provided in *Appendix D*. The results of the PID soil screening and laboratory fuel oil analyses are presented on *Figures 2 and 3,* respectively.

As indicated on *Figures 2 and 3*, petroleum impacted soils were encountered during pipeline excavation and removal operations. The most heavily impacted soils were observed to be associated with pipelines located to the south of tank berms 3, 5, 7, and 8 and with pipelines located within tank berm 5. Based on the results of PID readings and visual and olfactory observations, the horizontal extent of petroleum impacted soils adjacent to the pipelines was generally limited to the three to four feet of fill material on either side of the pipeline. Exceptions to this were noted in pipeline areas south of tank berms 3 and 5 where the contaminated soil was observed to extend towards and beneath portions of the southern berms. The low permeability glacial till material surrounding the fill material associated with the pipelines appears to have largely inhibited further horizontal migration of petroleum. Vertically, the impacted soils were found at or below the elevation of the pipeline. Because the shallow depth to bedrock in the lower tank farm area and tank berms 7 and 8, it is assumed that petroleum impacted soils extend down to the overburden-bedrock interface. This was observed to be the case during removal of the petroleum-saturated soils.

When encountered, heavily impacted soils were tested to determine if they would be considered petroleum saturated. Suspected petroleum-saturated soils were evaluated by using the State of Maine DEP jar shake test. This test is conducted by placing soil in a jar containing water, stirring to break up soil clumps, and observing to determine if product droplets or a product layer forms on the water surface. Approximately 50 cubic yards of soil meeting the petroleum-saturated jar shake test were excavated and stockpiled on site during the underground fuel pipeline removal work for future treatment. Based on our observations, field screening, and data available for the Site, GZA estimated that an additional 500 to 1000 cubic yards of petroleum-saturated soil may exist in various areas primarily in the lower tank farm where underground piping was removed. The areas where petroleum-saturated soils were initially suspected based on PID readings, laboratory analyses, and jar-shake tests are indicated on *Figures 2A and 2B*.

3.0 PETROLEUM-SATURATED SOIL REMOVAL

GZA and subcontractors mobilized manpower, equipment, and materials to the DFSP-Casco Bay facility on October 17, 1996 to complete excavation from known and suspected areas of petroleum-saturated soil not affected by risk-based action levels. Based on our observations, field screening, and data available for the Site, GZA and its subcontractor (K&K Excavation, Inc. of Turner, Maine) excavated petroleum-saturated soil primarily from the lower tank farm area in the vicinity of former underground fuel pipeline locations. Excavation proceeded initially to horizontal and vertical limits established by GZA's previous characterization work and observations made during pipe removal work under Task Order ACO-0011 and continued based on field jar shake testing. Excavated petroleum-saturated soil was directly loaded into tri-axial dump trucks for transportation to a common stockpile location that was established in the former AST-12 diked area. Approximately 780 cubic yards of additional petroleum-saturated soil was excavated and stockpiled on site. The areas where petroleum-saturated soils were determined to be present and subsequently removed are shown on *Figures 3A and 3B*.

Upon completion of excavation of petroleum-saturated soil from the areas identified on *Figures 3A* and *3B*, confirmatory samples were collected from excavation boundaries to verify that petroleum-saturated soil was removed. Confirmatory samples included discrete (grab) samples collected from the excavation sides and bottom, at a frequency of three to four samples per general area where petroleum-saturated soil was removed. Soil samples were submitted to GZA's Environmental Chemistry Laboratory located in Newton Upper Falls, Massachusetts using standard EPA-approved Chain-of-Custody procedures. Soil samples were analyzed for total fuel oil by Maine DEP Method 4.1.2 and for VOCs by EPA Method 8260. The laboratory analytical results for confirmatory samples are summarized on *Table 4*. The laboratory data reports are provided in *Appendix D*. The results of the confirmatory sampling and analyses are included on *Figures 3A and 3B* with the sample designation prefix "EX".

Excavated petroleum-saturated soil was replaced with dike berm material and finished to the original grade. Excavated/disturbed areas were stabilized (i.e., to limit potential erosion) as necessary and in accordance with Maine DEP *Bureau of Land Quality Control Regulations*.

4.0 ON-SITE COLD-MIX ASPHALT RECYCLING

Excavated petroleum-saturated soil and oiled-sand stockpiled in the AST-12 dike berm was treated on site via the cold-mix asphalt recycling process by United Retek Corporation (Retek) of Milford, Massachusetts from October 16, through October 30,

1996, and as approved by Maine DEP[2] (copy attached in *Appendix B*). The cold-mix asphalt recycling process was accomplished by blending the petroleum-saturated/oiled-sand soil with chemically engineered asphalt emulsion within a modified Midland Model T-4100 pugmill. Using a front-end loader, soil was fed into a hopper, from where it was conveyed to a mixing chamber. In the mixing chamber, the soil passes through a series of counter-rotating blades in the pugmill where the emulsion is applied at a predetermined mixing rate. The asphalt emulsion coated soil exited the pugmill where it was stockpiled and allowed to cure. During the curing process, which takes approximately 72 hours, the water from the aqueous-emulsion evaporates allowing the asphaltic mixture to adhere to coated soil particles creating a stabilized paving-like material that can be used immediately or maintained in a stockpile for future use. The asphalt emulsion stabilized material produced by the Retek process immobilizes the contaminant compounds present in the petroleum contaminated soils being recycled. The contaminant compounds are chemically and physically bound in the cured asphalt matrix where they are rendered environmentally unavailable. Approximately 9,145 tons of petroleum contaminated soil was recycled using the Retek process. The daily totals for recycled soil is included on copies of Retek daily weight slips provided in *Appendix C*.

The effectiveness of the stabilized/recycled material was evaluated by laboratory testing using the TCLP for total petroleum hydrocarbons (TPH). Post process composite samples were obtained on a daily basis by Retek personnel and submitted to GeoLabs, Inc. of Rockland, Massachusetts. The TCLP-TPH analytical results indicate non-detect for all samples submitted. Laboratory analytical reports are provided in *Appendix D*. These results demonstrate the effectiveness of the Retek process in reducing the mobility and environmental availability of the petroleum contaminants in Site soil.

Treated material was stockpiled within AST-12 diked area and allowed to cure prior to being available as paving base material. Recycled material was subsequently used as a paving base material along the on-site earthened perimeter road.

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TABLES

FIGURES

[2] DEP letter dated October 16, 1996, Re: Proposal for Soil Pile Remediation, Defense Fuel Support Point, Harpswell, Maine.

TABLES

FIGURES

REMEDIAL ACTION COMPLETION REPORT
MAIN GATE AREA
DEFENSE FUEL SUPPORT POINT -
CASCO BAY
SOUTH HARPSWELL, MAINE
DESC CONTRACT #DLA600-93-C-5342

PREPARED FOR:
Defense Energy Support Center
Alexandria, Virginia

PREPARED BY:
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Portland, Maine

April 1998
File No. 21649.81

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face of the excavation adjacent to the Upper Tank Farm Perimeter Road, and samples C-8 (DRO of 41 mg/kg) and C-12 (DRO of 150 mg/kg and GRO of 57 mg/kg) were collected from the face of the excavation adjacent to the Main Access Road. Additionally, elevated PID readings and immunoassay screening results were obtained for samples collected from the excavation sidewalls adjacent to the pump house (C-1), and adjacent to the Main Access Road (C-4).

GZA recommended and DEP approved discontinuation of excavation activities in these areas based on field observations, and non-detect PID and immunoassay screening results for soil samples collected from test pits (TP-1, TP-2, and TP-3) located on opposite sides of these structures from the excavation. The test pit screening results did not indicate the presence of petroleum contamination. Continued excavation in the vicinities of confirmation samples C-1, C-2, C-4, C-8, and C-12 would have undermined the adjacent roads.

8.0 CONCLUSIONS AND RECOMMENDATIONS

On behalf of DESC, GZA completed remedial measures between June 4 and July 16, 1997 in the Main Gate Area of the DFSP-Casco Bay facility located in South Harpswell, Maine in accordance with our revised work plan, dated May 21, 1997. As part of the remedial measures, GZA excavated an existing leachfield and associated concrete distribution box and approximate 1,500-gallon septic tank, because these were located within the area of petroleum-contaminated soils; excavated approximately 8,287 tons of identified petroleum-impacted soil (source contamination), which exceeded the cleanup level of 30 ppm and treated same by thermal treatment; and conducted confirmatory soil sampling.

Laboratory test results for confirmatory soil samples associated with material left in-place met (i.e., were below) the soil cleanup level, with the exception of three samples collected from excavation walls adjacent to the Upper Tank Farm Perimeter Road (C-2), and adjacent to the Main Access Road (C-8 and C-12). Additionally, elevated PID readings and immunoassay screening results were obtained for samples obtained from the excavation sidewalls adjacent to the pump house (C-1), and adjacent to the Main Access Road (C-4). GZA recommended and DEP approved discontinuation of excavation activities in these areas based on field observations, and non-detect PID and immunoassay screening results for soil samples collected from test pits (TP-1, TP-2, and TP-3) located on opposite sides of these structures from the excavation.

The information provided herein demonstrates that identified uncontrolled soil contamination has been remediated and that no substantial hazards remain in the Main Gate area. Accordingly, we believe that no further action with respect to soil contamination is necessary for the Main Gate area of the Casco Bay facility.

May '98

SUPPLEMENTAL SITE CHARACTERIZATION RESULTS AND RESPONSE TO MAINE DEP EBS REPORT COMMENTS DEFENSE FUEL SUPPORT POINT CASCO BAY TERMINAL HARPSWELL, MAINE

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Ft. Belvoir, Virginia

PREPARED BY:
GZA GeoEnvironmental, Inc.
Portland, Maine

May 1998

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unconsolidated overburden material is estimated to be in the range of 0.007 to 12.6 ft/day. The seepage velocity is an approximate measure of the average rate of movement of dissolved contaminants with bulk groundwater flow (advective transport). Other physical/chemical processes that influence the movement of contaminants include hydrodynamic dispersion, adsorption, volatilization, and biodegradation. The extent to which these processes may affect transport of contaminants at the site was not quantitatively assessed as a part of this study. This information will be used to help model the leaching of petroleum compounds from soil to groundwater and to set exposure point concentrations.

9. CONCLUSIONS AND RECOMMENDATIONS

9.1 CONCLUSIONS

Based on the findings of this investigation, as discussed above, GZA concludes the following:

1. Comparison of the tank berm area ICP lead data to the Maine DEP suggested guideline for concentrations of total lead in soil for trespasser or adult workers which may require remediation of 700 mg/Kg, indicates that none of the samples tested by ICP exceed the DEP guideline. Similarly, results of the lead sampling adjacent to site buildings indicated that only one of the eighty-four samples contained a lead concentration above the trespasser/adult worker guideline of 700 mg/kg. Based on these results, it does not appear that the concentrations of lead detected in surficial soils at the site represent a significant risk to human health.

   Based on the results of the baseline risk assessment, ecological benchmarks for soil invertebrate exposure to lead ranges from 500 to 1,000 ppm. The use of 500 ppm as a screening benchmark is therefore considered conservative and should be protective of soil organisms. As a result, it is GZA's opinion that the concentrations of lead detected in surficial soils at the site do not represent a significant risk to the environment.

2. The results of the supplemental sampling of stream sediments indicate that the PAH contamination detected previously at sampling locations SS14 and SS18 is relatively localized and likely does not represent a significant risk to human health or the environment. Similarly, the arsenic detected previously at sampling location SS12 appears to be limited to a small area in this vicinity. Arsenic was not detected above the minimum detection limit in samples SS-106, SS-107, SS-205, or SS-206 located near sample location SS12.

   Based on these results, it is GZA's opinion that due to the relatively low concentrations of PAHs and/or metals detected in previous sample rounds, and the apparently very localized extent of these contaminants, the presence of these compounds do not represent a significant risk to human health or the environment at the site.

3. No VOCs or PAHs were detected above the method detection limits in any of the beach sediment samples submitted for analyses, including those samples collected from the black colored sediments. It is our opinion that the black colored sediments present in the beach area reflect sediments containing a large fraction of organic material and not residual petroleum contamination.

4. Comparison of subtidal zone sediment results to the NOAA and FDEP sediment quality benchmarks indicates that concentrations of several PAHs exceed ER-M and PEL concentrations in two samples, SS119 and SS120, located on the bay side of the pier. However, total PAHs in either sample do not exceed the total PAH benchmarks. The results of the November 1994 sediment sampling round also indicates exceedances of ER-M and PEL concentrations for several PAHs and total PAH concentrations in two samples, SS-29 and SS-30, collected from the pier area.

   Based on the results of the sediment sampling conducted to date and the results of the baseline risk assessment, it is GZA's opinion that due to the depth of water adjacent to the barge pier, approximately 30 to 40 feet, the presence of the PAHs in sediments do not represent a significant risk to human health. However, the exceedance of ER-M and PEL benchmarks for several PAH compounds detected in sediment samples adjacent to the pier suggests that populations of benthic organisms dwelling in the sediment immediately adjacent to the pier may be adversely impacted by these compounds.

5. No VOCs or PAHs were detected above the method detection limits in any of the groundwater discharge/tidal pool water samples submitted for analyses. This information, together with the results of the sediment sampling in the beach area, suggests that exposure to groundwater discharge and sediments in the beach area do not represent a significant risk to human health or the environment.

6. GZA excavated and collected soil samples from 41 test pits in an area identified as the former drum storage area. Based on laboratory analyses, PID readings, and visual and olfactory observations in the former drum storage area, petroleum impacted soils are present in an area approximately 70 by 220 feet in dimension and extend up to 10 feet deep.

7. The results of laboratory analyses on soil samples collected from borings in the upper tank farm area tank berms indicate that DRO were detected at concentrations ranging from non-detect to 1,300 mg/Kg. VOCs were also detected in most samples where DRO was detected. The results of the additional borings and laboratory analyses confirm that the area of greatest concern is in the Tank 10 area.

9.2 RECOMMENDATION

During recent meetings with the Maine DEP, a soil cleanup standard of 870 mg/Kg of DRO in soil to a depth of 8 feet or the bedrock surface, whichever is greater, was agreed upon for DFSP Casco Bay. In consideration of the findings and conclusions of the supplemental investigations discussed above, and previous Hydrogeologic Studies and

Risk Characterization completed at the Site, GZA recommends that planning and an engineering evaluation of potential remedial alternatives for petroleum impacted soil be initiated. The evaluation should consider the estimated extent and volume of petroleum impacted soil exceeding the 870 mg/Kg soil cleanup standard for DRO, effectiveness, site-specific implementability, and relative cost with recommendations for a final response action for the Site. The final response action should be developed in a final Remedial Action Plan for the Site.

LANDFILL CLOSURE RECORD REPORT
LANDFILL CLOSURE CONSTRUCTION
DEFENSE FUEL SUPPORT POINT
SOUTH HARPSWELL, MAINE

PREPARED FOR:
Defense Energy Support Center
Ft. Belvoir, Virginia

PREPARED BY:
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Portland, Maine

September 1998
File No. 25235.2

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FIGURES

1.00 INTRODUCTION

GZA GeoEnvironmental, Inc. (GZA) has prepared this report summarizing the closure construction of the former solid waste/demolition debris landfill located at the Defense Fuel Support Point (DFSP) - Casco Bay facility in South Harpswell, Maine. Closure construction was completed by GZA as the Construction Manager for the Defense Energy Support Center (DESC) of Ft. Belvoir, Virginia. This report includes brief descriptions of the project and the construction; an outline of the responsibilities of each party involved with the project during construction; a discussion of construction and quality assurance procedures, with reference to the attached record documentation; and a summary of revisions to or minor deviations from the construction plans and specifications to address certain conditions encountered during construction.

The enclosed record drawings, Figures 1 through 5, include a locus plan, a site plan, a topographic plan of the completed work, and typical sections and details of the permanent construction. The appendices of this report contain copies of the record documentation prepared as construction progressed, and include field summaries; construction photographs; results of laboratory soil conformance testing; and contract documents issued during construction. These documents are records of construction procedures and earthwork quality assurance testing; the discussion and resolution of construction-related issues; and changes to the construction plans and specifications.

2.00 PROJECT BACKGROUND

2.10 DFSP CASCO BAY FACILITY AND LANDFILL SITE DESCRIPTION

The DFSP - Casco Bay facility is located on the west side of Harpswell Neck, about 1,000 feet north of the village of West Harpswell, Maine. A site locus plan is provided as Figure 1. The former landfill is located in the southwest portion of the facility, about 600 to 700 feet east of Casco Bay and about 50 feet north of the DFSP southern property boundary. The abutting properties to the south consist of privately held land which is currently wooded and undeveloped. A site plan is provided as Figure 2.

2.20 PRE-CONSTRUCTION CONDITIONS OF FACILITY LANDFILL

The DFSP facility landfill encompasses approximately 3 acres, called-out as the approximate landfill limits on Figure 2. The landfill is surrounded by wooded areas, and unpaved roads border the landfill to the south and west. Prior to closure construction, the landfill was predominately wooded, with only the western portion of the landfill vegetated with shrubs,

and/or weeds and grasses. Solid waste/demolition debris was exposed at the ground surface along the northern margin and in the north central portion of the landfill. The types of waste/debris exposed included: soil and rock, stumps and logs, concrete rubble, bricks, wooden boards, scrap metal, metal cables, small pails, and numerous rusted (empty) metal drums.

Numerous test pits were excavated as part of the hydrogeological study completed by GZA in support of the landfill closure design. Based on test pit observations, the landfilled materials consist predominantly of soil, large rocks (cobbles to boulders), stumps, and organic detritus (peat, leaves, roots), which comprise approximately 75 percent of the solid waste materials present. Other solid waste materials observed included construction debris, including concrete and masonry debris, steel cables, other building debris, and empty 5-gallon metal containers. In addition, small quantities of incinerator ash and material thought to be residuals from tank bottom sludge were observed in portions of the landfill disposal area.

As shown on Figures 2 and 3, the landfill is located on the east side of a generally north-south trending topographic ridge. The pre- and post-construction ground surface in the area of the landfill ranges from an elevation of about 82 feet Mean Sea Level (MSL), near the crest of the ridge, to an elevation of about 54 feet MSL along the northern toe of the landfill. In general, topography in the vicinity of the landfill slopes downward towards the northeast, from the crest of the ridge towards an unnamed stream located near the center of the DFSP property, approximately 200 to 250 feet from the landfill limits. The slope decreases with distance away from the ridge crest, becoming relatively flat in the area of the unnamed stream.

Based on observations of the landfill and a topographic survey completed in June 1996, and depicted as "original contours" on Figure 3, pre-construction landfill topslopes were generally about 5 to 10 percent. Two areas in the western portion of the landfill had topslopes of less than 5 percent. Landfill sideslopes were typically about two horizontal to one vertical (2H:1V) along most of the northern margin of the landfill, and about 6H:1V in the northwest portion of the landfill. Pre-construction topography in the southwest portion of the landfill indicated convergent surface water flow existed in this area.

Seasonally wet areas abut the northern and northeastern margins of the landfill. Surface water runoff from the landfill and surface water from the wet areas flows towards the northeast, eventually discharging into the unnamed stream. Drainage in the relatively flat area between the toe of the landfill sideslope and the unnamed stream is generally poorly defined.

2.30 OBJECTIVES OF CLOSURE CONSTRUCTION

The objectives of closure construction were to provide a physical barrier to direct exposure to the waste materials, promote stormwater runoff and evapotranspiration, and reduce infiltration into the waste. As indicated previously, the existing cover in the main body of the landfill consisted of a vigorous growth of emergent woodlands with no exposed waste

observed and with suitable post-closure slopes. GZA's closure design contended, and the Maine Department of Environmental Protection (DEP) concurred, that it would not be beneficial to disturb this area in order to fine grade and subsequently "re-cover" the area. Therefore, the area requiring regrading and closure was limited to the area outside the main wooded body of the landfill and encompassed approximately 1.8 acres of the total 3-acre area. The portion of the landfill requiring closure included the steep slopes along the northern margin of the landfill; areas where the topslopes were less than 5 percent; areas of exposed wastes; and the area of convergent surface water flow. This area is depicted on Figure 3 as the "limits of closure" and consisted of a mixture of open and wooded areas.

3.00 CONSTRUCTION OVERVIEW

To meet the project objectives, closure of the DFSP Casco Bay facility landfill included the following work items:

- Identifying an on-site borrow source for the low permeability soil cover, sampling the proposed source, and completing a laboratory conformance testing program to evaluate if the proposed source met the intent of the project specifications and to develop placement criteria;
- Clearing, grubbing, and stripping those portions of the landfill requiring closure;
- Removing bulky debris observed along the northerly toe of the landfill, and disposing this material off-site in a licensed solid waste landfill;
- Regrading (steepening) portions of the landfill as needed to achieve minimum slopes of 5 percent, and to promote dispersion of storm water as "sheet flow" downgradient of the landfill;
- Regrading (flattening) the north sideslope of the landfill from its pre-construction 2H:1V slope to 3H:1V, and disposing of the excavated waste materials within the landfill footprint as part of the regrading effort discussed above;
- Placing 18 inches of low permeability soil cover, obtained from an on-site borrow area, over all portions of the landfill disturbed as part of the work;
- Placing topsoil over all disturbed areas on the landfill;
- Hydroseeding all areas disturbed by the closure construction, including the on-site borrow area; and
- Providing a stone perimeter toe drain along the northerly limit of waste to dissipate seepage pressures that will likely exist due to the shallow groundwater table observed in this area.

Closure construction commenced on November 12, 1997 with the installation of temporary erosion control measures. Work items resulting in soil disturbance, such as clearing, grubbing, and stripping operations, did not commence until November 17, 1997 upon receipt of State and local permits. Waste relocation and regrading, cover system construction, and seeding of disturbed areas was complete on about December 4, 1997. A substantial completion site walk was conducted on December 15, 1997, during which a punchlist of items to check and complete during the 1998 construction season was developed. The site appeared to be stabilized for winter on that date. A 1998 site walk was completed on May 19, 1998 and punchlist items for 1998 were completed on May 26, 1998. A May 28, 1998 site inspection verified the punchlist items had been completed, and a final site inspection on September 23, 1998 confirmed a good stand of grass had developed and the site was stable.

4.00 CONSTRUCTION COORDINATION

The following provides a brief overview of the roles of the project team members involved with final closure construction of the DFSP Casco Bay facility landfill:

- Defense Energy Support Center (DESC) [formerly DFSC], Ft. Belvoir, Virginia: DESC manages the Federally-owned facility and retained GZA, through a task order contract, to complete the closure construction on their behalf.

- GZA GeoEnvironmental, Inc. (GZA), Portland, Maine: GZA was retained by DESC to complete the closure construction. To accomplish this GZA prepared bid documents; administered the bid process; selected and retained the earthwork contractor; obtained the necessary wetlands- and site development-related Federal, State, and local permits; and served as Construction Manager and as Construction Quality Assurance (CQA) Agent for the project. GZA provided overall administrative oversight and day-to-day management of the work, and observed, tested, and documented the methods and materials used by our earthwork contractor to complete the construction. Specific construction-phase duties performed by GZA included coordinating the soil conformance testing program, providing quality assurance testing, observing the contractor's work for compliance with the intent of the contract documents, documenting the construction, reviewing and approving technical submittals and applications for payment, coordinating the survey of the completed construction, and preparing this record document.

- Harry C. Crooker & Sons, Inc. (Crooker), Topsham, Maine: Crooker was retained by GZA to complete the closure construction. Crooker, as the contractor, was responsible for implementing the methods and procedures required per the construction agreement with GZA, and for completing the construction in accordance with the requirements of the project documents.

- Normandeau Associates, Inc. (NAI), Yarmouth, Maine: NAI was retained by GZA to perform a wetlands survey, obtain necessary wetlands permits and approvals, and address any wetlands-related considerations prior to the initiation of landfill closure construction.

- Berry Huff McDonald Milligan, Inc. (BH2M), Gorham, Maine: BH2M was retained by GZA to survey the limits of wetlands identified by NAI, provide construction layout control services, and prepare a topographic survey plan of the completed construction.

- Morrison-Jacques Whitford (M-JW), Waterville, Maine: M-JW was retained by GZA to perform soils laboratory conformance testing.

As the majority of closure construction operations occurred within a two-week period, informal on-site construction meetings were held on a daily-basis between Crooker's Site Superintendent and GZA's Resident Construction Manager. These meetings were held in lieu of more formal weekly or bi-weekly meetings typical of longer-duration projects.

5.00 CONSTRUCTION AND QUALITY ASSURANCE PROCEDURES

Closure construction was completed in general accordance with the project plans and specifications. The following narrative describes the general construction procedures that were observed and the testing that was performed by GZA during the closure of the DFSP landfill. Detailed descriptions of the construction procedures utilized by Crooker are included in the daily field summaries, included in Appendix A, as are the results of quality assurance testing completed by GZA. Selected photographs of the construction are included in Appendix B. Post-closure construction site conditions are depicted on Figure 3. Figures 4 and 5 depict typical details and sections of the permanent construction.

5.10 EROSION AND SEDIMENTATION CONTROL

Prior to commencing any intrusive activities, Crooker established a silt fence barrier along the downgradient limits of work and downgradient limits of the on-site borrow area. Temporary and permanent erosion and sedimentation control measures implemented by Crooker during construction included the following:

- Maintaining the established silt fence barrier and installing additional silt fence barrier and hay bales, as needed;

- Excavating a trench across the entrance to the borrow area to trap runoff within that work area;

- Grading the landfill to promote stormwater runoff radially away from the waste mass; and

- Placing topsoil, seeding, and mulching disturbed areas.

5.20 HEALTH AND SAFETY

Pursuant to the project requirements, Crooker prepared and implemented a site-specific Health and Safety Plan (HASP) during completion of work involving the disturbance or potential disturbance of waste material. This included grubbing and stripping; bulky debris removal; and waste relocation and regrading operations.

5.30 CLEARING, GRUBBING, AND STRIPPING

Materials generated as a result of the clearing operation and, to the extent practicable, the grubbing operation were chipped and removed from the site. Stumps unsuitable for chipping, were ground on-site and mixed, together with the limited quantity of unsuitable materials stripped from the landfill site, with inorganic soil and waste and deposited into portions of the landfill as part of the relocation/regrading operation. To limit post-closure total and differential settlement, this material was incorporated into the footprint of the landfill in lifts typically less than six inches thick.

5.40 LIMITS OF CLOSURE

The limits of waste within the portion of the landfill requiring closure (limits of closure) were identified by GZA prior to construction based on numerous test pits completed as part of the hydrogeological study performed in support of the landfill closure plan. The limits of the closure were staked in the field by the project surveyor prior to Crooker mobilizing to the site.

5.50 BULKY DEBRIS REMOVAL

Crooker removed the bulky debris observed along the northern margin of the landfill. The bulky debris was loaded into a dump truck using an excavator, crushed in the dump truck, and hauled to a licensed disposal site. The bulky debris included empty drums and buckets, timbers, and concrete. It is estimated that Crooker removed approximately seven to eight tons of bulky debris from the site.

5.60 WASTE RELOCATION AND REGRADING

As depicted on Figure 3, final grades were maintained at no steeper than 33 percent (3H:1V), nor flatter than 5 percent (20H:1V). The cover system was typically terminated as depicted on Figure 4. The full thickness of the soil barrier layer extended to at least the limits of closure identified in the field with stakes. When the cover system was installed, the topsoil layer extended beyond the soil barrier layer and blended into existing exterior grades beyond that point. The landfill area was graded to promote flow of stormwater runoff off of and away from the cover system.

Crooker used bulldozers to regrade and relocate waste material to achieve the required minimum and maximum slopes, and eliminate areas of convergent stormwater runoff flow. Subsequent to tracking the regraded areas with a bulldozer, each lift of regraded and/or relocated material was compacted with repeated passes of a vibratory pad-foot and a vibratory smooth-drum compactor. To provide a stable surface for subsequent lifts, the lift was compacted until the material appeared firm and stable.

5.70 COVER SYSTEM CONSTRUCTION

The cover system placed over the regraded and prepared landfill area consisted of the following layers, ascending from the top of waste: 6-inch-thick daily cover layer over areas of exposed waste; 18-inch-thick soil barrier layer; and 6-inch-thick vegetated topsoil layer. A cover system schematic is provided on Figure 4.

DAILY COVER: Crooker placed an approximately 6-inch-thick lift of common borrow over areas where debris was exposed at the surface and to shim up any low areas. The common borrow was placed and tracked using a bulldozer, and compacted by several passes of a vibratory smooth-drum compactor. Common borrow material was obtained from the soil barrier layer borrow source, in consideration of the relatively low permeability of the "waste mass," which was observed to consist predominately of glacial till soil.

SOIL BARRIER LAYER: Soil barrier layer material consisted of glacial till meeting the material specifications. The glacial till soil was obtained from an on-site borrow source that is depicted on Figure 2. In accordance with the project specifications, a soil laboratory testing program was undertaken as part of the borrow source evaluation program, to support the selection of borrow material-specific moisture-density placement criteria. Samples of the proposed soil barrier layer material borrow were obtained and submitted for gradation (by ASTM D 422), standard Proctor moisture-density (by ASTM D 698), Atterberg Limits (by ASTM D 4318), and reconstituted permeability (by ASTM D 5084) testing.

Gradation test results, which met the project material specifications, were used to preliminarily approve the proposed borrow source. Subsequently, moisture-density and permeability testing were completed to relate acceptable permeability to as-compacted (moisture and density) conditions. The required testing program is outlined in Section 02200, Paragraph 3.06 of the project specifications. The results of the testing program are provided in Appendix C.

Based on the test program, the soil barrier layer, when constructed to at least 95 percent of the material's maximum standard dry density and at a moisture content of about 2 percent below to 2 percent above optimum, was expected to have an in-place hydraulic conductivity less than $1x10^{-5}$ centimeters per second (cm/sec). (The lower moisture content was

determined to be acceptable based on an additional hydraulic conductivity test run dry of optimum. This condition was specifically evaluated as part of the conformance testing program due to the late construction start and the associated desire not to require the contractor to add water to the borrow material to increase the in-place moisture content.)

Crooker placed the soil barrier layer material in approximate 10-inch-thick loose lifts (9-inch-thick after compaction). Each lift was generally compacted with five to seven passes of a vibratory pad-foot compactor, followed by three to five passes of a vibratory smooth-drum compactor. At the completion of each work day Crooker "sealed" the surface of the soil barrier layer by static rolling the surface with a smooth drum compactor. Prior to placing the second lift of material, Crooker roughened the surface of the previously placed and accepted soil barrier layer material with the pad-foot compactor or bulldozer to promote good bonding between lifts.

Field moisture and density tests were performed by GZA on the in-place soil barrier layer material. The results of the testing indicated the compacted material met the project specifications for percent compaction (minimum of 95 percent of the material's maximum standard dry density) and moisture (minimum of two percent below and maximum of two percent above optimum). The in-place material appeared firm and stable subsequent to compaction. The approximate locations of the tests and test results are provided in the field summaries included in Appendix A.

VEGETATED TOPSOIL LAYER: Topsoil material was placed as part of the cover system and over all areas of the landfill site disturbed by the construction. The topsoil was imported to the site and generally consisted of a 3-inch-minus loam, with lesser amounts of sand. Topsoil was placed in an approximately 6-inch-thick lift and tracked prior to seeding. Both the disturbed portions of the landfill and the on-site borrow area were hydroseeded. The seed mix was applied in general accordance with the Maine BMP standards for hydroseeding. All seeded areas were subsequently mulched using a hay mulch. The seed mix and application rates were general conformance with the project specifications. At the request of GZA, *Winter Rye* was added to the seed mixture in consideration of the late seeding date. Lime and fertilizer were applied in one operation with the seed mix.

5.80 PERIMETER TOE DRAIN

In accordance with the project drawings, a perimeter toe drain was constructed along the toe of slope located along the northeast margin of the landfill to dissipate seepage pressures resulting from a high groundwater table observed in this area. The toe drain was constructed of 1-1/2-inch crushed stone wrapped in a geotextile fabric for separation. The limits of the toe drain are depicted on Figure 3. A typical detail of the toe drain is provided on Figure 5. Based on wet conditions observed during the site inspection completed on May 19, 1998, the stone area was extended easterly from the limit depicted on the landfill closure design drawings in the vicinity of existing monitoring wells OGMW-4 and GZ-15. Change Order No. 1 was issued to address this modification.

6.00 DESIGN REVISIONS AND MINOR MODIFICATIONS

As discussed above in Section 5.80, one change order was executed during construction to address conditions encountered as work progressed. Change Order No. 1 addressed the extension of the stone toe drain. A copy of the change order is included in Appendix D.

Figures 4 and 5, typical details of the constructed work, depict minor revisions and additions to the construction details. Specifically, these are the addition of a cover system termination detail for the upgradient edge of work, and a minor reconfiguration of the stone toe drain. The latter was undertaken in consideration of the late season start to expedite the work by allowing stone placement prior to soil barrier layer and topsoil placement. It is GZA's opinion that both changes met the intent of the original closure design.

REMEDIAL ACTION COMPLETION REPORT
DEFENSE FUEL SUPPORT POINT
CASCO BAY
SOUTH HARPSWELL, MAINE
DESC CONTRACT # SPO600-98-C-5303
TASK ORDER ACO-0001

PREPARED FOR:
Defense Energy Support Center
Fort Belvoir, Virginia

PREPARED BY:
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Portland, Maine

April 1999
File No. 21649.94

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extended in the vicinities of those confirmation sample locations and, as such, the soil associated with these samples was removed and treated and additional confirmation soil samples were collected.

8.0 PRODUCT RECOVERY SYSTEM CLOSURE

In 1990, GTI assisted DESC in the remediation of a JP-5 release within the terminal near the Tank #1 dike and the Administration Building. GTI installed a remediation system consisting of large diameter recovery wells, an interceptor trench, a dual-pumping recovery system, and an oil/water separator to contain and recover separate-phase product. The remediation system was operated for approximately one year and resulted in the recovery of approximately 2,100 gallons of separate-phase product.

On November 9 through 11, 1998, GZA removed and disposed of the defunct remediation system. In general, the following activities were performed to complete system removal:

- The dual pumping recovery system and controls were disconnected and removed from the recovery well;
- Two 2-foot-diameter culvert-type recovery wells and a 5-foot-diameter slotted steel recovery well were removed by excavating and extracting the well casings. The excavations were subsequently backfilled and compacted with clean dike berm material from the site; and
- An 8,000-gallon steel oil/water was pumped out using a vacuum truck, cleaned, removed from the ground, and prepared for off-site disposal. Influent and effluent piping to the separator were reconnected (currently tied into area surface drainage system), and the excavation was backfilled and compacted with clean dike berm material from the site. Approximately 3,020 gallons of petroleum-impacted liquid and sediments/sludge were pumped from within the separator using a vacuum truck and managed off site (*Photographs 18* through *20*).

9.0 SUMMARY

On behalf of DESC, GZA completed remedial measures associated with identified petroleum-contaminated soil between July 20 and November 25, 1998 at the DFSP Casco Bay facility located in South Harpswell, Maine in accordance with the RAP dated July 1998. Approximately 53,926.39 tons of petroleum-impacted soil (source contamination) was excavated and treated on site using LTTD. GZA conducted

confirmatory soil sampling, in accordance with DEP protocol, on excavation soil that was left in-place and soil treated by LTTD. Laboratory test results for confirmatory soil samples were all below the 870 ppm soil cleanup level for the site.

In addition to the activities identified in the RAP, GZA also removed the defunct GTI product recovery system that was located in the vicinity of the former Administration Building #126 in the Lower Tank Farm Area.

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FACILITY REMEDIATION CLOSURE REPORT
DEFENSE FUEL SUPPORT POINT
CASCO BAY
SOUTH HARPSWELL, MAINE

PREPARED FOR:
Defense Logistics Agency
Defense Energy Support Center
Fort Belvoir, Virginia

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Portland, Maine

February 2000
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of the arithmetic mean concentration in soil. The human health risk assessment preliminary cleanup target concentration of 917 mg/Kg (approximately equivalent to parts per million [ppm]) for TPH in soil was calculated as an acceptable level for use in risk management decisions regarding the site. The cleanup standard of 870 ppm (for DRO or gasoline range organics [GRO]) was agreed upon based on a meeting with the DEP on March 24, 1998, which was in line with a similar decision by the DEP for the Loring Air Force Base Site in Limestone, Maine.

3.0 REMEDIATION ACTIVITIES FOR RESTORATION AND CLOSURE

This section describes the facility-wide environmental restoration and compliance tasks completed for closure of DFSP, Casco Bay in a manner that would: (1) comply with applicable federal, state, and local requirements; (2) be protective of human health and the environment; and (3) limit potential long-term liability to DESC as the former property lessee.

The overall Site closure and restoration strategy called for restoration activities to remediate contaminated soils to the established cleanup goal of 870 ppm DRO in order to be protective of human health and limit the potential for Site soil to act as an ongoing source of groundwater contamination (source reduction). The closure strategy for DFSP-Casco Bay was designed to insure that all regulatory requirements were met and that adequate and cost effective restorations are implemented as quickly as possible to provide for the expedited transfer and reuse of DFSP-Casco Bay in accordance with FOST and Maine DEP requirements and DFSC and the Town of Harpswell goals.

The remedial tasks summarized in this section are abbreviated. Full descriptions and backup documentation for many tasks discussed can be found in the report referenced in each section.

3.1 AST FUEL STORAGE AND DELIVERY SYSTEMS DECOMISSIONING AND REMEDIATION

The 14 ASTs, consisting of six 50,000 bbl ASTs and eight 80,000 bbl ASTs, five buildings associated with fuel transfer operations, and all fuel transfer pipelines were dismantled and removed from the site between April 11, 1996 and July 12, 1996. A total of approximately 3000 tons of steel and 150 tons of aluminum from the ASTs was removed from the site and transported to various facilities for recycling. During decommissioning activities, contaminated soils were encountered below tank structures and adjacent to pipelines. Excavation and treatment of these materials are also covered

in this section. Full documentation of these remedial efforts can be found in GZA's recycling report [4] .

3.1.1 Sand Layer Removal and Sampling

Laboratory test results of a composite sample of the oiled-sand layer obtained from beneath the floor of AST-14 indicated that the sample exhibited the presence of petroleum hydrocarbons, metals, and polynuclear aromatic hydrocarbons (PAHs). The characteristics of the hydrocarbon chromatogram and the presence of metals and PAHs suggested that the oily sand layer may have originated from applying a waste oil mixture to the sand to create "oiled-sand."

Based on this assumption, the resulting mixture (i.e., waste oil and sand) would be regulated in the State of Maine under Chapter 860, the *Waste Oil Management Rules* (the Rules). In accordance with the Rules, the waste oil mixture must be further evaluated to determine whether the mixture exhibits Resource Conservation and Recovery Act (RCRA) hazardous waste characteristics. If the mixture did exhibit RCRA hazardous waste characteristics, then it is subject to regulation under Chapter 850, *Hazardous Waste Management Rules*. If the mixture did not exhibit RCRA waste characteristics, then Department of Environmental Protection (DEP) generally allows it to be managed consistent with alternatives for management of virgin petroleum contaminated soil.

RCRA characterization of the oiled sand from beneath each of the ASTs was performed on composite samples collected throughout each sand layer. The test results for oiled-sand samples indicated that the mixture did not exhibit RCRA waste characteristics. Based on these results, the oiled-sand from each AST location was excavated and stockpiled (approximately 5000 cubic yards) within AST-12 tank berm for later treatment as discussed below. Areas of contaminated soil removal are shown on Figure 3.

3.1.2 Pipeline Dismantling And Removal

Fuel pipelines were exposed by excavation of overlying soils in discrete sections along the pipeline corridors. Pipeline excavation was generally performed by starting on pipeline sections located in topographically high locations (upper tank farm area) and proceeding to topographically low locations (lower tank farm area) to allow for draining of any residual product in the pipelines. The pipeline was then cut with mechanical shears, lifted from the excavation, and staged for removal of the asbestos containing wrap found on all subsurface pipelines. A total of 22,390 linear feet of fuel pipelines, together with associated pumps and valves, were dismantled and removed from the Site.

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[4] GZA GeoEnvironmental, Inc. July 1997, On-Site Cold-Mix Asphalt Recycling Report, Defense Fuel Support Point, Casco Bay, Maine.

3.1.3 Excavation/Soil Screening and Sampling

Soil samples were collected in duplicate from below the pipeline at approximately 20-foot intervals along the excavation and screened on site using a photoionization detector (PID). Approximately ten percent of the duplicate soil samples collected were submitted for total fuel oil analyses by Maine Method 4.1.2.

Petroleum impacted soils were encountered during pipeline excavation and removal operations. The most heavily impacted soils were observed to be associated with pipelines located to the south of tank berms 3, 5, 7, and 8 and with pipelines located within tank berm 5. Based on the results of PID readings and visual and olfactory observations, the horizontal extent of petroleum impacted soils adjacent to the pipelines was generally limited to the three to four feet of fill material on either side of the pipeline. Exceptions to this were noted in pipeline areas south off tank berms 3 and 5 where the contaminated soil was observed to extend towards and beneath portions of the southern berms. The low permeability glacial till material surrounding the fill material associated with the pipelines appears to have largely inhibited further horizontal migration of petroleum. Vertically, the impacted soils were found at or below the elevation of the pipeline. Because the shallow depth to bedrock in the lower tank farm area and tank berms 7 and 8, it is assumed that petroleum impacted soils extend down to the overburden-bedrock interface.

When encountered, heavily impacted soils were tested to determine if they would be considered petroleum saturated. Suspected petroleum-saturated soils were evaluated by using the State of Maine DEP jar shake test. Approximately 50 cubic yards of soil meeting the petroleum-saturated jar shake test were excavated and stockpiled on site during the underground fuel pipeline removal work for future treatment.

3.1.4 Petroleum-Saturated Soil Removal

GZA and subcontractors mobilized manpower, equipment, and materials to the DFSP-Casco Bay facility on October 17, 1996 to complete excavation from known and suspected areas of petroleum-saturated soil not affected by risk-based action levels. Based on our observations, field screening, and data available for the Site, GZA and its subcontractor, K&K Excavation, Inc. of Turner, Maine, excavated petroleum-saturated soil primarily from the lower tank farm area in the vicinity of former underground fuel pipeline locations. Excavation proceeded initially to horizontal and vertical limits established by GZA's previous characterization work and observations made during pipe removal work and continued based on field jar shake testing. Excavated petroleum-saturated soil was directly loaded into tri-axial dump trucks for transportation to a common stockpile location that was established in the former AST-12 diked area. Approximately 780 cubic yards of additional petroleum-saturated soil was excavated and stockpiled on site.

Upon completion of excavation of petroleum-saturated soil confirmatory samples were collected from excavation boundaries to verify that petroleum-saturated soil was removed. Confirmatory samples included discrete (grab) samples collected from the excavation sides and bottom, at a frequency of three to four samples per general area where petroleum-saturated soil was removed.

Excavated petroleum-saturated soil was replaced with dike berm material and finished to the original grade. Excavated/disturbed areas were stabilized (i.e., to limit potential erosion) as necessary and in accordance with Maine DEP *Bureau of Land Quality Control Regulations*.

3.1.5 On-Site Cold-Mix Asphalt Recycling

Excavated petroleum-saturated soil and oiled-sand stockpiled in the AST-12 dike berm was treated on site via the cold-mix asphalt recycling process by United Retek Corporation (Retek) of Milford, Massachusetts from October 16, through October 30, 1996, as approved by Maine DEP[5]. The cold-mix asphalt recycling process was accomplished by blending the petroleum-saturated/oiled-sand soil with chemically engineered asphalt emulsion within a modified Midland Model T-4100 pugmill. The asphalt emulsion coated soil exited the pugmill where it was stockpiled and allowed to cure. During the curing process, which takes approximately 72 hours, the water from the aqueous-emulsion evaporates allowing the asphaltic mixture to adhere to coated soil particles creating a stabilized paving-like material that can be used immediately or maintained in a stockpile for future use. The asphalt emulsion stabilized material produced by the Retek process immobilizes the contaminant compounds present in the petroleum contaminated soils being recycled. The contaminant compounds are chemically and physically bound in the cured asphalt matrix where they are rendered environmentally unavailable. Approximately 9,145 tons of petroleum contaminated soil was recycled using the Retek process.

The effectiveness of the stabilized/recycled material was evaluated by laboratory testing using the TCLP for total petroleum hydrocarbons (TPH). Post process composite samples were obtained on a daily basis by Retek personnel and submitted to GeoLabs, Inc. of Rockland, Massachusetts. The TCLP-TPH analytical results indicated non-detect for all samples submitted indicating that leaching of TPH from the treated samples was not a concern[6].

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[5] DEP letter dated October 16, 1996, Re: Proposal for Soil Pile Remediation, Defense Fuel Support Point, Harpswell, Maine.

[6] GZA GeoEnvironmental, Inc. March 1998, On-Site Cold-Mix Asphalt Recycling Report, Defense Fuel Support Point, Harpswell, Maine.

Treated material was stockpiled within AST-12 diked area and allowed to cure prior to being available as paving base material. Recycled material was subsequently used as a paving base material along the on-site earthened perimeter road.

3.2 UST FUEL/PRODUCT STORAGE SYSTEMS DECOMISSIONING AND REMEDIATION

The Site formerly included 14 USTs, ranging in size from 1,000 to 10,000 gallons, which were used to store gasoline and diesel for truck refueling and generator operation; No. 2 fuel oil for heating; FSII for fire fighting; and waste/slop oil from vehicle and pumping station maintenance activities. A data summary for these tanks is presented in the following table.

TANK NUMBER	TANK TYPE	PIPING TYPE	TANK SIZE (gallons)	PRODUCT STORED	DATE INSTALLED	DATE REMOVED	COMMENTS
1	Steel	Steel	1,000	#2 Fuel Oil	9/52	6/85	No DEP file; replaced with 500-gallon AST.
2	Steel	Steel	1,000	#2 Fuel Oil	9/52	6/87	No DEP file; not replaced.
3	Steel	Steel/Cath.	10,000	FSII+	6/85	11/91	DEP Report; P-677-91 letter SGB.
4	Steel	Steel	1,000	Waste Oil	9/52	11/91	DEP Report; P-677-91 letter SGB.
5	Fiberglass	Steel	10,000	Waste Oil	9/82	11/91	DEP Report; P-677-91 letter SGB.
6	Steel	Steel	5,000	Diesel	9/52	11/91	DEP File P-677-91/J, Higgins Report - OK.
7	Steel	Steel	5,000	Diesel	9/52	11/91	DEP File P-677-91/J, Higgins Report - OK.
8	Steel	Steel	1,000	Waste Oil	9/52	11/91	DEP Report; P-677-91 letter SGB.
9	Steel	Steel	1,000	Waste Oil	9/52	11/91	DEP Report; P-677-91 letter SGB.
10	Steel	Steel	1,000	Regular Gasoline	6/62	4/90	DEP File P-245-90/Leaker; soil removed; landspread per DEP.
11	Steel	Steel	1,000	Waste Oil	9/52	11/91	DEP Report; P-677-91 letter SGB.
12	Steel/Cath.	Steel/Cath.	4,000	Waste Oil	7/85	11/91	DEP Report; P-677-91 letter SGB.
13	Steel	Steel	1,000	#2 Fuel Oil	9/52	6/87	No DEP Report.
14	Steel	Steel	1,000	#2 Fuel Oil	9/52	6/87	No DEP Report.

The former locations of the 14 USTs are shown on Figure 3. All of the 14 USTs were closed and removed during the period 1985 to 1991. UST-10, a 1,000-gallon steel tank formerly located adjacent to Building 129 and used to store regular gasoline, was documented as a leaking UST upon its removal in April 1990. Approximately 350 cubic yards of gasoline-impacted soil was generated during removal of the tank. This soil was landfarmed by Groundwater Technology Inc. (GTI) in the Tank 4 berm area. No evidence of a release was identified during removal of the remaining 13 USTs.

In addition, as part of supplemental subsurface investigations performed by GZA for the Site EBS, GZA excavated and collected soil samples from 39 test pits in areas adjacent to site buildings and former UST locations where potential releases of petroleum and hazardous substances could have occurred. Soil samples were analyzed for VOCs by EPA Method 8260, SVOCs by EPA Method 8270, DRO by Maine Method 4.1.25, GRO by Maine Method 4.2.17, polychlorinated biphenols (PCBs) and pesticides by EPA Method 8081, and herbicides by EPA Method 8150A. No VOCs, herbicides, pesticides or PCBs were detected above the minimum detection limit in any of the soil samples submitted for analyses. DRO, GRO, and SVOCs were detected in one soil sample from a test pit located near Building 129 (maintenance building) in the vicinity of former UST #1 and fuel pipelines. Soil from this area was excavated and remediated as part of the overall site remediation. GRO was also detected at very low concentrations (5 ppm or less) in three other soil samples taken from former UST locations. No other compounds were detected in either of the three soil samples.

3.3 MAIN GATE AREA REMEDIATION

The Main Gate area of the DFSP-Casco Bay facility encompasses an area of approximately 1/4-acre, located immediately adjacent to the facility's eastern boundary and main entrance along US Route 123 (*see Figure 2*). The area of concern for this project is bounded to the south by the main access road, to the west by aboveground storage tank (AST) T-14 diked area, and to the north and east by the facility fenceline.

The Main Gate area was identified as a potential area of concern in 1989, when benzene was identified in the nearby facility bedrock water supply well (which at the time served the DFSP facility and two nearby Navy-owned residences). DESC's objective for remediation of petroleum-contaminated soil in the Main Gate area was based on DESC's position that, due to the proximity of residential water supply wells to contamination in the Main Gate area, this condition represented a potential risk to the residential water supply wells, and needed to be addressed independent of the remedial actions on the remaining portions of the DFSP facility. Although groundwater quality observed within monitoring wells between the Main Gate area and abutting residential properties to the east continued to meet DEP groundwater quality standards (e.g., GZ-11), DESC felt that it was prudent to remove potential source contamination in Main Gate soils.

DESC chose to remove petroleum-contaminated soil in the Main Gate area to an arbitrary cleanup level of approximately 30 mg/Kg (approximately parts per million) gasoline, which it believed should be acceptable based on closure of the DFSP-Casco Bay facility in accordance with the DEP and Department of Human Services risk-based guidance policy, and assumptions for future use of the site that include recreational and limited commercial use. This cleanup level is just below the lowest detected concentration of total fuel oil in soil samples from two hot spot locations (MG-2 and MG-11) in the Main Gate area. DESC selected this cleanup level based on the

assumptions for future use of the site, and preliminary calculation of risk-based cleanup guidelines. These preliminary calculations indicated limited risk associated with direct exposure to soils within the Main Gate Area.

In order to meet DESC closure objectives and complete clean-up within a reasonable time frame, DESC determined that source removal consisting of excavation and off-site thermal treatment of petroleum contaminated soil at the Dragon Products, Inc. facility located in Thomaston, Maine was an appropriate remedial alternative. As part of the remedial measures, GZA excavated an existing leachfield and associated concrete distribution box and approximate 1,500-gallon septic tank, because these were located within the area of petroleum-contaminated soils; excavated approximately 8,287 tons of identified petroleum-impacted soil (source contamination), which exceeded the cleanup level of 30 mg/Kg and treated same by thermal treatment; and conducted confirmatory soil sampling. A full description of activities is presented in GZA's Main Gate Report[7]

3.3.1 Septic Characterization, Removal, And Disposal

As part of the remedial measures, GZA excavated an existing leachfield and associated concrete distribution box and approximate 1,500-gallon septic tank, because these were located within the area of petroleum-contaminated soils. The distribution box and septic tank were connected with PVC pipe to an approximate 4,000-gallon concrete pumping chamber, located across the main access road from the excavation and adjacent to the Gate House.

On June 4, 1997 prior to excavation, a sample of the septic wastewater was collected for analysis of petroleum-related constituents, because it was a suspected source of the observed subsurface contamination. The results for the septic wastewater sample did not indicate the presence of petroleum contaminants.

Approximately 500 gallons of sludge and 5,000 gallons of wastewater from the septic tank and pumping chamber was removed by R.A. Webber and Sons, a licensed septage contractor, and disposed at the Brunswick Waste Water Treatment Facility. GZA's subcontractor, K & K Excavation, Inc. (K&K) of Turner, Maine, cleaned the distribution box, tank, chamber, and associated piping using pressure washing/steam cleaning methods. The concrete distribution box and septic tank were subsequently crushed, and the concrete pieces were spread out within the excavation backfill to limit settlement. PVC piping from the septic system was disposed as demolition debris together with corrugated metal drain pipe excavated from adjacent to the access road.

During excavation of the leachfield by K&K, piping labeled "transite" (asbestos) was encountered within the excavation leading from the septic tank to the north, and

[7] GZA GeoEnvironmental, Inc., April 1988, Remedial Action Completion Report, Main Gate Area, Defense fuel Support Point-Casco Bay, South Harpswell, Maine.

towards an older, inactive leachfield. The entire length of transite piping from the septic tank to the inactive leachfield distribution box was excavated and staged on polyvinyl sheeting. New Meadows Abatement, Inc. of Bath, Maine was retained by GZA to dispose of the transite piping, which totaled about 3 cubic yards. The transite piping was transported by Lagano Trucking Co., Inc. of Portland, Connecticut, for disposal at the Southern Alleghenies Disposal Services landfill in Holsopple, Pennsylvania.

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3.3.2 Excavation Activities And Test Pits

K&K initiated remedial activities by establishing soil stockpile staging areas and associated silt fence barriers. Organic topsoil that was stripped from ground surface, and the upper 3 feet of clean soil in the excavation area was segregated and stockpiled within the staging area. Field screening measurements of the segregated soil with a photoionization detector (PID) and field observations did not indicate the presence of VOCs or petroleum hydrocarbons.

Excavation of petroleum-contaminated soils was initiated on about June 16, 1997, after removal of the septic system, and continued until July 10, 1997. Excavation continued from the southern edge of the area of contamination, as identified during previous studies, and adjacent to the main access road near MG-11. It proceeded approximately 100 feet to the west, towards the T-14 berm, and also approximately 100 feet to the north and east. The excavation bottom ranged from depths of about 10 to 12 feet in the western portion near the Upper Tank Farm Perimeter Road, and from about 18 to 20 feet in the eastern portion under a suspect former UST bed. Groundwater was generally not encountered within the excavation.

During excavation activities, field screening of the soil was performed for VOCs with a PID and for petroleum hydrocarbons with immunoassay test kits. Discrete confirmatory samples were collected for laboratory analysis when screening results for the excavation sidewall or bottom indicated petroleum hydrocarbon concentrations below the target level. Confirmation samples were obtained from at least 6 inches into the excavation face. Excavation along the sidewall or bottom was discontinued when continued excavation would undermine the adjacent roads or pump house, or when the confirmatory results indicated concentrations below the target level. As a result, soil exceeding the 30 mg/kg cleanup standard remains under a portion of the adjacent access road.

3.3.3 Soil Handling, Thermal Treatment, And Site Restoration

The excavated petroleum contaminated soil was generally loaded directly into trailer dumps for shipment to the Dragon Products Inc. (Dragon) rotary cement kiln facility for thermal treatment. Between June 17, 1997 and July 10, 1997, an approximate daily average of 500 tons, or total of 8,287 tons, of contaminated soil was loaded and transported to Dragon.

Backfilling of the excavation was performed by K&K between June 30, 1997 and July 14, 1997. The backfill was placed in 12- to 18-inch loose lifts, and compacted with 2 to 4 passes of a rubber tired Trojan 3500 payloader with loaded bucket. The backfill consisted of fill from the berm between tank areas T-14 and T-12, as well as fill from the berm between tank areas T-14 and T-13. Topsoil was spread over areas that were disturbed during the excavation and backfilling activities. The topsoil was soil that had been stripped and stockpiled prior to initiation of the excavation. It was placed over the disturbed areas in approximate 6-inch loose lifts, and tracked with a Case 580 bulldozer. Fertilizer, seed, and mulch were spread over the topsoil on July 16, 1997.

3.4 REMOVAL AND DISPOSAL OF MISCELLANEOUS PETROLEUM PRODUCTS, CHEMICALS, HAZARDOUS MATERIALS, AND DEMOLITION OF SITE BUILDINGS

The results of a hazardous materials survey conducted at the facility included development of an inventory list of hazardous/suspected hazardous materials, and/or materials which may require special handling or disposal, observed at the site. Inventoried materials included consumer-sized cleaning materials, petroleum-related products, unlabeled containers, and asbestos-containing materials (ACM). The following inventoried materials were consolidated and lab-packed for proper disposal by Clean Harbors Environmental Services, Inc. of South Portland, Maine, and shipped on May 20 1997, to Clean Harbors Services, Inc. disposal facility in Chicago, Illinois.

Building 129 - Repair and Maintenance Shop

- Approximately 30 containers of consumer-sized greases, cleaning agents, petroleum-related products;
- 3 5-gallon gasoline cans, half-empty;
- 2 small cans of methylene chloride;
- 1 1-gallon container roofing cement;
- 1 small container zinc chloride;
- 1 container labeled as battery water; and
- 2 5- gallon lube cans;

Building 158 - Garage

- 10 five-gallon containers with unknown ingredients;
- 20 1-pint containers of synthetic oil; and
- 10 asbestos gaskets (labeled as such);

Building 159 - Stand-By Generator House

- 1 55-gallon drum SAE 30 motor oil (half full);

- Consumer-sized containers of hazardous materials-such as coolant; and
- Fuel in 275-gallon fuel oil tanks outside building.

3.4.1 Asbestos and Lead Containing Materials

In addition to the hazardous materials survey described above, GZA also completed a demolition-level survey to supplement asbestos and lead data collected during previous screening-level surveys performed for the site. Samples were collected from interior and exterior portions of site buildings as applicable (Maintenance Building #129, Storage Building #130, Well House #166, Pier Pump House #175, and Truck Rack Structure #181 and Separator Building #160). The survey included the collection of building material samples from representative painted building surfaces (lead-containing materials [LCMs])and samples of potential asbestos-containing building materials (ACMs).

The results of survey data indicated that hazardous ACMs/LCMs existed at the site. The following ACMs/LCMs were removed prior to building/structure removal:

- Maintenance Building #129 - Approximately 150 square feet of green floor tile (8% Chrysotile) located in the bathroom, roofing material on the small compressor shed (15% Chrysotile), and the compressor shed (RCRA hazardous for lead - 24.3 milligrams per liter by TCLP analysis);
- Administration Building #126 - Approximately 4000 square feet of vinyl asbestos tile and underlying mastic were removed.
- Separator Building #180 - Roofing material (point count > 1% Chrysotile);
- Sentry Building #164 - Approximately 500 square feet of black floor tile (8% Chrysotile) located throughout; and
- Truck Rack Structure #181 - Corrugated roofing (50% Chrysotile) and insulation around pipe penetrations within the concrete footings (10% Chrysotile).

Following abatement of the ACMs and LCMs, demolition and removal of Storage Building #130, Well House #166, Truck Rack Structure #181 and Separator Building #180, lower tank farm Foam House, and the concrete sludge tank associated with Generator Building #159 was completed. All building materials and building contents, including concrete slabs, were removed from the site or crushed to 3-inch minus and used as clean fill material, except for Storage Building #130. Only the outer wall and roof metal sheathing of Storage Building #130 was removed leaving the frame, concrete slab and foundation intact. Once cleaned, the concrete sludge pit structure was crushed-in-place to 6-inch minus and backfilled with berm material from the site. All other concrete foundations/footings and rebar were removed to two feet below grade.

All other equipment and material was removed from the site to be sold as scrap and beneficially recycled or disposed of as solid waste.

For the buildings that remained at the Site, DESC and DEP requested that lead abatement be performed. The remaining buildings include the Administration Building #126, Maintenance Building #129, the frame of Storage Building #130, Garage Building #158, Generator Building #159, Water Treatment Building #161, Sentry Building #164, Checker House #167 (on pier), Pier Pump House #175, Water Tower Boiler Building #170, Wood-Framed Building #171 (behind Building #170), Foam House #200, and the Water Tower Well House.

Based on the inspection of painted surface conditions at the site and discussions with lead abatement contractors and the DEP, a "house cleaning" approach (i.e., general clean-up and removal of flaking paint) versus complete removal of all painted surfaces was performed by New Meadows, Inc. of Auburn, Maine. This approach addressed the potential exposure concern due to inhalation of dust/particulates from flaking paint and was more practical.

3.4.2 Transformer Removal

The following PCB-containing, or formerly PCB-containing, electrical transformers were removed from the Site by General Chemical Corporation and shipped on June 4, 1997 to S.D.Myers, Inc. in Tallonage, Ohio for proper disposal: three primary transformers from the Main Gate Area; six secondary transformers from the water Treatment Building; three secondary transformers from the Generator Building; and six oil-filled switches from the Generator Building.

3.5 DEMOLITION DEBRIS LANDFILL CLOSURE

The DFSP facility landfill encompasses approximately 3 acres, called-out as the approximate landfill limits on *Figure 3*. The landfill is surrounded by wooded areas, and unpaved roads border the landfill to the south and west. Prior to closure construction, the landfill was predominately wooded, with only the western portion of the landfill vegetated with shrubs, and/or weeds and grasses. Solid waste/demolition debris was exposed at the ground surface along the northern margin and in the north central portion of the landfill. The types of waste/debris exposed included: soil and rock, stumps and logs, concrete rubble, bricks, wooden boards, scrap metal, metal cables, small pails, and numerous rusted (empty) metal drums.

Numerous test pits were excavated as part of the hydrogeological study completed by GZA in support of the landfill closure design[8]. Based on test pit observations, the

[8] GZA GeoEnvironmental Inc., June 1997, Hydrogeologic Investigation, Former Solid Waste/Demolition Debris Landfill Area, Defense Fuel Support Point, Casco Bay Terminal, Harpswell, Maine.

landfilled materials consisted predominantly of soil, large rocks (cobbles to boulders), stumps, and organic detritus (peat, leaves, roots), which comprise approximately 75 percent of the solid waste materials present. Other solid waste materials observed included construction debris, including concrete and masonry debris, steel cables, other building debris, and empty 5-gallon metal containers. In addition, small quantities of incinerator ash and material thought to be residuals from tank bottom sludge were observed in portions of the landfill disposal area.

GZA

The objectives of closure construction were to provide a physical barrier to direct exposure to the waste materials, promote stormwater runoff and evapotranspiration, and reduce infiltration into the waste. The existing cover in the main body of the landfill consisted of a vigorous growth of emergent woodlands with no exposed waste observed and with suitable post-closure slopes. GZA's closure design contended, and the Maine Department of Environmental Protection (DEP) concurred, that it would not be warranted to disturb this area in order to fine grade and subsequently "re-cover" the area. Therefore, the area requiring regrading and closure was limited to the area outside the main wooded body of the landfill and encompassed approximately 1.8 acres of the total 3-acre area. The portion of the landfill requiring closure included the steep slopes along the northern margin of the landfill; areas where the topslopes were less than 5 percent; areas of exposed wastes; and the area of convergent surface water flow.

Closure construction commenced on November 12, 1997 with the installation of temporary erosion control measures by Harry C. Crooker & Sons, Inc. (Crooker), Topsham, Maine[9]. Work items resulting in soil disturbance, such as clearing, grubbing, and stripping operations, did not commence until November 17, 1997 upon receipt of State and local permits. Crooker removed the bulky debris observed along the northern margin of the landfill. The bulky debris was loaded into a dump truck using an excavator, crushed in the dump truck, and hauled to a licensed disposal site. The bulky debris included empty drums and buckets, timbers, and concrete. It is estimated that Crooker removed approximately seven to eight tons of bulky debris from the site.

The cover system placed over the regraded and prepared landfill area consisted of the following layers, ascending from the top of waste: 6-inch-thick daily cover layer over areas of exposed waste; 18-inch-thick soil barrier layer; and 6-inch-thick vegetated topsoil layer. A perimeter toe drain was constructed along the toe of slope located along the northeast margin of the landfill to dissipate seepage pressures resulting from a high groundwater table observed in this area. The toe drain was constructed of 1-1/2-inch crushed stone wrapped in a geotextile fabric for separation.Waste relocation and regrading, cover system construction, and seeding of disturbed areas was completed on December 4, 1997.

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[9] GZA GeoEnvironmental, Inc., September, 1998, Landfill Closure Record Report, Landfill Closure Construction, Defense Fuel Support Point, South Harpswell, Maine.

A substantial completion site walk was conducted on December 15, 1997, during which a punchlist of items to check and complete during the 1998 construction season was developed. The site appeared to be stabilized for winter on that date. A 1998 site walk was completed on May 19, 1998 and punchlist items for 1998 were completed on May 26, 1998. A May 28, 1998 site inspection verified the punchlist items had been completed, and a final site inspection on September 23, 1998 confirmed a good stand of grass had developed and the site was stable.

Monitoring wells located in the former demolition debris landfill area continue to be monitored as part of the facility wide Long Term Monitoring Plan.

3.6 INSTALLATION OF NEW POTABLE WATER SUPPLY WELL

As part of the agreement for turning the property over to the Town of Harpswell, DESC agreed to provide the site with a new potable water supply. Preliminary approval to start the potable water supply program was granted by Maine Department of Human Services (DHS) in a letter dated May 29, 1998 and was assigned potable water supply identification #94688. In this letter, DHS outlined the following requirements for the work to be performed: 1) Location of the well must be at least 300 feet from the nearest leach field; 2) Regular testing for Volatile Organic Compounds (VOCs) given the historic use of the site as a fuel depot; 3) A pump test must be performed at a minimum of 48 hours prior to collecting water samples for analysis; 4) Satisfactory results from two water tests must be attained before approval to operate this well as a Transient Non-Community Water System (TNCWS); and 5) Final approval must be attained from the Drinking Water Program prior to commissioning the well on line.

On June 11, 1998 GZA observed the installation of a six-inch diameter bedrock well on the southeastern end of the Site. Fred Perry and Daughters of Harpswell, Maine drilled a total of 275 feet below the ground surface, which was recorded at 250 feet above the National Geodetic Vertical Datum (NGVD) or Mean Sea Level (MSL). Although bedrock was encountered at 38 feet below ground surface during drilling, 60 feet of casing was installed to prevent groundwater from infiltrating the well and to ensure that only water from the bedrock would be collected in the well.

To ensure that the well would meet the necessary drinking water standards, a pump test was performed from June 23 through June 25, 1998 at a pumping rate of approximately 15 gallons per minute. Continuous water level readings were electronically recorded with dataloggers on the newly installed well and two adjacent existing monitoring/observation wells, GZ-1 and the former Main Gate water supply well. Three other existing wells were manually monitored on a regular basis to observe potential localized effects.

The water level data collected from the Drinking Well and the two observation wells equipped with the dataloggers indicated that the groundwater table was relatively static prior

to the pump test. Once the pump test was started, the influence observed in these monitoring wells appeared to be negligible. Additionally, the influence due to the potential drawdown of the pump test was negligible in the manually monitored wells as well.

Due to the lack of influence observed in the other observation and monitoring wells, the coefficient of storativity was unable to be calculated for the Drinking Well. However, the transmissivity of the Well was found to be approximately 211 gallons per day per foot (GPD/ft) using both the Theis Solution and Jacob Method. The specific capacity was also estimated based on an empirical relationship for a confined aquifer and was found to be approximately 0.1 gallons per minute per foot of drawdown (GPM/ft). A derived solution for specific capacity was unattainable since this characteristic property is intrinsically calculated when the coefficient of storativity is known.

Groundwater samples were collected following the 48-hour pump test and submitted for analysis of Gasoline Range Organics (GROs) by Maine Method 4.2.17, Diesel Range Organics (DRO) by Maine Method 4.1.25, VOCs by EPA Method 8260, and State required E1 test parameters which include nitrate, nitrite, chloride, hardness, fluoride, copper, iron, manganese, zinc, arsenic, barium, cadmium, chromium, lead, mercury, silver, selenium, sodium, color, turbidity, pH, and total coliform.

No DROs, GROs or VOCs were detected in the samples from the Drinking Well. The water quality samples were also found to contain less than the maximum permissible level [Maximum Contaminant Level (MCL) or Maximum Exposure Guideline (MEG)] of compounds regulated by the U.S. Environmental Protection Agency (EPA) and the Maine Department of Human Services (DHS) with the exception of sodium (34.7 mg/L) exceeding the MCL (20 mg/L), and iron (0.67 mg/L) exceeding the Secondary MCL (0.3 mg/L).

A new 2-inch linear polyethylene (LPE) water supply line and 1-inch polyvinyl chloride (PVC) electrical conduit was installed from the bedrock drinking water well to the former water treatment building located in the Main Gate Area of the site in August 1999 during regrade operations described below. The excavation for the water supply line was placed along the northern perimeter of "Road E" and extended to five feet below ground surface. The water line and conduit were placed within a 1-foot layer of clean imported sand backfill placed at the base of the excavation and compacted in-place. The excavation was then be backfilled to grade with clean site material compacted in-place (in less than 2-foot lifts and containing no rocks over 4-inch in diameter). Water line connection to the 6-inch well casing required using a 2-inch pitless adaptor. The water line and conduit were run to the concrete foundation at the former water treatment building. Foundation penetration of the water treatment building was finished with a water-tight seal and pipe and conduit ends capped. Following completion of the water line installation, the water line was pressure tested.

To date, all tasks have been completed with the exception of submitting to DHS for final approval. GZA will submit this approval form following approval from DESC to do so.

Water and electrical conduit have been installed from the well to the existing water treatment building onsite.

3.7 PETROLEUM-CONTAMINATED SOILS IN TANK FARM AND FORMER DRUM STORAGE AREAS

A preliminary tank farm and hydrogeologic investigation was performed in June 1995, to assess for the presence and extent of soil contamination in the vicinity of the 14 ASTs and associated fuel pipelines in the upper and lower tank farm areas[10]. Soil samples were collected by GZA personnel during the excavation of over 70 test pits in the lower tank farm area, and the advancement of over 130 geoprobes in the upper tank farm area and along fence line locations.

Photoionization detector (PID) and on-site field screening using gas chromatography (GC) indicated that petroleum hydrocarbons were present in soil samples collected from subsurface explorations in all 14 tank areas, adjacent to the two pump houses in the lower tank farm area, and along underground fuel pipelines. The most heavily impacted areas were observed to be in Tank Areas 1, 3, and 5 and pump house #2 in the lower tank farm, and Tank Areas 7, 8, and 10 in the upper tank farm. Potential sources of petroleum releases include tank bottom failures, underground/aboveground fuel pipelines, and former underground oil and waste oil tanks on site.

As part of a supplemental site investigation[11], GZA performed additional subsurface soil explorations adjacent to site buildings, and former underground storage tanks (USTs), within the former Drum Storage Area, and in the Upper Tank Farm area. DRO was detected at concentrations ranging from non-detect to 9,800 mg/Kg. Results of laboratory analysis of test boring/pit soil samples were used in conjunction with visual observations and the results of previous investigation work to develop the inferred extent of soil contamination likely to exceed the 870 mg/Kg DRO risk-based soil cleanup standard for the site as negotiated with the DEP on March 24, 1998.

3.7.1 Excavation And Soil Stockpiling

Remedial activities were initiated by establishing a contaminated soil stockpile, referred to as a staging area located along the northern side of the Tank #12 berm area. Excavated petroleum-impacted soils were loaded directly into dump trucks and transported to the soil staging area prior to Low Temperature Thermal Desorption (LTTD) treatment. The staging area was lined with a 6-mil poly vinyl chloride sheeting

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[10] GZA GeoEnvironmental, Inc., February 1996, Hydrogeologic Assessment, Defense Fuel Support Point Casco Bay, South Harpswell, Maine and Hydrogeologic Assessment Report Addendum, February 1997.
[11] GZA GeoEnvironmental, Inc., May 1998, Supplemental Site Characterization Results and Response to Maine DEP EBS Report Comments, Defense Fuel Support Point Casco Bay terminal, Harpswell, Maine.

barrier within the tank berm area and appropriate erosion control measures were employed.

Excavation of petroleum-contaminated soils was initiated on August 4, 1998, by K&K Excavation, Inc. (K&K) of Turner, Maine and continued until October 29, 1998. The approximate final limits of the excavation areas are shown on *Figure 3*. Excavation was initiated within the Upper Tank Farm area (i.e., Tank #10 berm area where a majority of the petroleum-contaminated soil exceeding the 870 ppm cleanup guideline was believed to be present). Excavation of soils proceeded to the horizontal and vertical limits based on field screening and laboratory test results from the previous test boring/pit program. During excavation, soil samples were collected from the excavation sides and bottom for visual evaluation, PID head space screening, and on-site chemical analysis using an ImmunoAssay field screening kit. When the results of the field screening indicated the presence of contamination above the 870 ppm cleanup guideline, excavation continued at the discretion of the Site Supervisor until the contaminated soil had been removed, based on additional visual observations and field screening, and/or soil was removed to a depth of 8 feet below ground surface (bgs) or competent bedrock was encountered.

3.7.2 Confirmatory Sampling Of Excavations

Upon completion of excavation operations, discrete confirmatory samples were collected for laboratory analysis when field screening results for the excavation sidewall or bottom indicated petroleum hydrocarbon concentrations below the target level. The sampling frequency was established at one sample every 30 linear feet around excavation walls, and one sample every 900 square feet within the floor of an excavation. Soil samples were collected and submitted for laboratory analysis for DRO using Maine Method 4.1.25 for all excavations. Soil samples collected from the Drum Storage Area were also analyzed for GRO using Maine Method 4.2.17. The excavation areas remained open while awaiting the results of the confirmatory analysis. If the analytical results indicated that the target remediation goals had been achieved, no further excavation was performed and the excavation area was backfilled with LTTD treated soil and the area restored. When laboratory data indicated the presence of contamination at levels exceeding the target remediation goals, additional soil was removed and the sampling and analytical testing process was repeated, unless soil excavation reached 8 feet bgs, or the bedrock surface was encountered.

3.7.3 LTTD Treatment Of Petroleum-Contaminated Soil

LTTD was chosen as an appropriate remedial alternative for the site because of its effectiveness for treating soils impacted with jet fuels. LTTD treatment of soils was performed by MidWest Soil Remediation, Inc. (MSR) of Elgin, Illinois. The MSR treatment system consisted of a CMI 80-120 LTTD plant, which is a mobile, stand-alone unit that uses multiple-phase processes to volatilize hydrocarbons from the soil and then

combust them into exhaust gases consisting of water and carbon dioxide. The system consists of soil screens, conveyors, rotary thermal desorber and conditioning/cooling drums, bag house filter, thermal oxidizer, and process control room.

Between August 27 and November 7, 1998, a daily average of approximately 800 tons of petroleum-contaminated soil was treated by MSR with a total of 53,926.29 tons treated. Prior to backfilling excavations with LTTD treated soil, representative soil samples were collected and submitted for laboratory analysis to confirm the removal of VOCs to below the project cleanup guideline of 870 ppm. The post treatment sampling consisted of collecting two to three representative, discrete samples per day of the treated soil as approved by DEP. The representative samples were submitted to Katahdin for DRO analysis using Maine Method 4.1.25, and for GRO analysis using Maine Method 4.2.17 when treatment of soil from the Former Drum Storage Area was performed. Sample analysis during the first week of operation was performed on a 24-hour turn-around time basis (48-hour turn-around time thereafter) to confirm treatability below the 870 ppm guideline. The results of laboratory testing of treated soil for DRO and GRO ranged from below detection limit (less than 5.0 ppm) to 52 ppm.

Backfilling the various excavations was performed by K&K between September 10 and November 8, 1998. Backfill material was placed in 12- to 18-inch lifts and compacted with two to four passes of a John Deere 850B Bulldozer until backfilling was completed to grade. Disturbed areas were temporarily regraded to match existing grades, and a hay mulch was used for erosion control purposes. Additional silt fences were installed in convergent flow areas to help minimize potential erosion during the winter and spring run-off and melting seasons. Areas not affected by the later site regrade were seeded and mulch hay was spread over the surface of the disturbed areas.

3.8 REMOVAL OF CONCRETE OIL/WATER SEPARATORS

Removal of the five concrete separators was recommended as their intended function, separation of oil and water resulting from AST spills, was no longer required due to the removal of all ASTs on-Site. Removal of the separators was performed during the Site regrading of tank berms in June and July 1999. Each seperator was removed by pulling with an excavator. Each former seperator location was filled with clean stone rip-rap to prevent erosion.

3.9 CLOSURE OF PRODUCT RECOVERY SYSTEM

In 1990, GTI assisted DESC in the remediation of a JP-5 release within the terminal near the Tank #1 dike and the Administration Building. GTI installed a remediation system consisting of large diameter recovery wells, an interceptor trench, a dual-pumping recovery system, and an oil/water separator to contain and recover separate-phase product. The remediation system was operated for approximately one year and resulted in the recovery of approximately 2,100 gallons of separate-phase product.

On November 9 through 11, 1998, GZA removed and disposed of the defunct remediation system. The following activities were performed to complete system removal:

- The dual pumping recovery system and controls were disconnected and removed from the recovery well;

- Two 2-foot-diameter culvert-type recovery wells and a 5-foot-diameter slotted steel recovery well were removed by excavating and extracting the well casings. The excavations were subsequently backfilled and compacted with clean dike berm material from the site; and

- An 8,000-gallon steel oil/water was pumped out by Seacoast Ocean Services, Inc. (SOS) of Portland, Maine using a vacuum truck, cleaned, removed from the ground, and prepared for off-site disposal. Influent and effluent piping to the separator were reconnected (currently tied into area surface drainage system), and the excavation was backfilled and compacted with clean dike berm material from the site. Approximately 3,020 gallons of petroleum-impacted liquid and sediments/sludge were pumped from within the separator using the vacuum truck and managed off site.

3.10 CONTAMINATED GROUNDWATER

The overall Site closure and restoration strategy called for restoration activities to remediate contaminated soils to established cleanup goals in order to limit the potential for Site soil to act as an ongoing source of groundwater contamination (source reduction). DESC has completed remediation of identified petroleum contaminated soil above the 870 ppm cleanup standard. The closure strategy for DFSP-Casco Bay was designed to insure that all regulatory requirements are met and that adequate and cost effective restorations are implemented as quickly as possible to provide for the expedited transfer and reuse of DFSP-Casco Bay in accordance with FOST and Maine DEP requirements and DESC and the Town of Harpswell goals.

To address groundwater contamination on-site, DESC has designed and implemented an Long Term Monitoring Plan (LTMP) for the Site[12]. The LTMP is to provide for a combination of detection monitoring at fenceline monitoring well locations, and tracking monitoring at a representative number of wells located in interior portions of the site during two sampling rounds per year. The objectives of detection monitoring are to provide for detection of possible off-site migration of fuel constituents. The objective of tracking monitoring is to gather additional water level and quality data at representative locations

[12] GZA GeoEnvironmental, Inc. October, 1999, Long Term Monitoring Plan, Groundwater Quality Monitoring Program, Defense Fuel Support Point, Casco Bay Terminal, Harpswell, Maine.

across the facility with the goal of tracking water level fluctuations, concentrations of fuel constituents and geochemical biodegradation indicator parameters. The tracking of concentrations of fuel constituents will be used, together with the results of the bioindicator parameters, to evaluate on-site natural attenuation of the fuel constituents in groundwater. Monitoring wells that are sampled as part of the LTMP are shown on *Figure 4*. Residential wells that are sampled as part of the LTMP are shown on *Figure 5*.

Two lines of evidence will be used to document natural attenuation at the site. The first will be through documenting reductions in pollutant concentrations as measured by sampling groundwater from the designated wells which will indicate reductions in total pollutant mass. The second will be through the use of spatial trends to show that trends in electron acceptor and metabolic by product concentrations correlate with an observed reduction in organic substrate concentrations.

Should analyses of the two lines of evidence used to document natural attenuation at the site: 1) reductions in contaminant concentrations as measured by sampling groundwater, and 2) the use of spatial trends to show that trends in electron acceptor and metabolic by product concentrations correlate with observations of organic substrate concentrations, not indicate that natural attenuation is progressing after a three year time period, additional field investigations/data analyses would be warranted. The use of contaminant concentrations in particular, should indicate a statistically significant decrease in concentrations as benchmarked against the Spring 1999 sampling round.

Any additional investigations/data analyses would likely focus initially on two issues: 1) determine if local areas of significant petroleum contamination are still present which are inhibiting natural attenuation and may need a more active remediation effort, and 2) are localized hydrogeochemical conditions (DO, electron acceptors, etc.) not conducive to natural attenuation.

3.11 SITE REGRADE ACTIVITIES

In addition to the remediation of petroleum-contaminated soils containing over 870 ppm DRO, the closure plan agreed to by DESC and the Maine DEP included the covering of all former tank berm floors using the remaining berm material to prevent direct exposure to petroleum impacted soils.

The Site berms were graded to approximately match existing terrace areas and sloped to allow for adequate site drainage by Coastal Environmental Corp. of Bangor, Maine during the period June 14 to August 4, 1999. Approximately 75,000 cubic yards of diked soil were moved for the regrading. No additional backfill or topsoil was imported to the site. During removal of the tank berms, abandoned electrical, telephone, and controls conduits along with fire protection piping (fiberglass) were also removed where encountered for off-site disposal as solid waste. All disturbed areas at the site were seeded and mulched to establish an adequate vegetative growth.

As part of the regrade operation, fourteen catch basins and twelve manholes were decommissioned. Decommissioning of catchbasins and manholes consisted of filling the structures with a washed crushed stone material to within two feet of ground surface or just above the top of the inlet and outlet openings for each structure, placing a 6-inch cap of concrete over the top of the stone, and backfilling with site material to grade. This will allow the dike underdrain systems to continue to function.

GZA

3.11.1 Electrical Conduit Installation

During regrade work, a new electrical conduit system (two 5-inch PVC conduits, pull-stations and concrete pads) was installed from the Main Gate Area of the site to the Marine Pier Area. Installation of the conduit was from the Main Gate Area at the former transformer pad (at Route 123), running north along the perimeter fence and Road "D", to the Generator Building (adjacent to the existing conduit route). From the Generator Building, installation of the conduit proceeded northeast following Road "B" along the eastern perimeter of the site, and meeting Road "A" at the former Administration Building and the Pier. This route from the Generator Building to the Pier was used (compared to a direct route through the lower tank farm area) so that the installation is upgradient from potentially contaminated soil/groundwater. The east side of the site also contained more overburden soils, therefore making it less likely that bedrock would be encountered during excavation.

3.11.2 Contaminated Soil Treatment

During regrading activities at DFSP - Casco Bay, suspect petroleum-impacted soil was encountered within the former Dike 10 Area beyond locations that were previously excavated and treated during 1998 remedial efforts. GZA collected a soil sample and submitted it for petroleum hydrocarbon analysis using Maine Method 4.1.25 (DRO). The laboratory results indicated a DRO concentration above the site-specific clean-up guideline of 870 mg/kg. As a result, approximately 665 tons of petroleum-impacted soil above the site-specific clean-up guideline of 870 mg/kg was excavated and taken to Commercial Recycling Systems of Scarborough, Maine on July 28, 1999. The results of the confirmatory sampling performed subsequent to soil excavation activities are presented in Table 1. Weight slips for the recycled soils and laboratory data sheets are included as Appendix B.

3.12 NEPA REPORT

The DESC determined the DFSP Casco Bay Bulk Fuel Storage Terminal in Harpswell, Maine to be excess property relative to the current and future needs of the Brunswick Naval Air Station. The 1995 National Defense Authorization Act, Section 2839, Land Conveyance Defense Fuel Support Point, Casco Bay, Maine stipulated that the property be turned over to the Town of Harpswell, Maine. As a result, the U.S. Navy intends to

transfer ownership of all real property and facilities associated with the former DFSP Casco Bay Bulk Fuel Storage Terminal to the Town of Harpswell, Maine.

The National Environmental Policy Act (NEPA) requires a detailed statement on the environmental impact of a proposed Federal action that may potentially have significant effects on the quality of the human environment. Pursuant to NEPA, the purpose of an Environmental Assessment (EA) is to evaluate and determine if the proposed action and/or alternatives will have significant effects on the human environment and whether an Environmental Impact Statement (EIS) is warranted. If no significant environmental effects are identified, a Finding of No Significant Impact (FONSI) can be prepared.

At the time of this report preparation, the Casco Bay NEPA document was undergoing review by the property owner, the U.S. Navy.

TABLES

FIGURES

RESULTS OF PUMP TEST AND WATER QUALITY MONITORING FOR NEW WATER SUPPLY WELL DEFENSE FUEL SUPPORT POINT CASCO BAY SOUTH HARPSWELL, MAINE

PREPARED FOR:
Defense Logistics Agency
Defense Energy Support Center
Fort Belvoir, Virginia

PREPARED BY:
GZA GeoEnvironmental, Inc.
Portland, Maine

June 2000
File No. 25187.13

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- Final approval must be attained from the Drinking Water Program prior to commissioning the well on line.

PROJECT APPROACH

In order to collect and evaluate the necessary information before commissioning the TNCWS, GZA performed the following tasks:

- Installation of a six-inch diameter bedrock water supply well (Drinking Well) on June 11, 1998 by Fred Perry & Daughters, Inc. Well Drilling of Harpswell, Maine. The well was installed to a depth of 275 feet below ground surface in an area of the Site that was not impacted by historic site use;

- To ensure that the well would meet the necessary drinking water standards, a pump test was performed from June 23 through June 25, 1998. Continuous water level readings were electronically recorded with dataloggers on the newly installed well and two adjacent existing monitoring/observation wells, GZ-1 and the Main Gate Water Supply (see Figure 1 for layout and locations). Three other existing wells were manually monitored on a regular basis to observe potential localized effects;

- Groundwater samples were collected following the 48-hour pump test and submitted for analysis of Gasoline Range Organics (GROs) by Maine Method 4.2.17, Diesel Range Organics (DRO) by Maine Method 4.1.25, VOCs by EPA Method 8260, and State required E1 test parameters which include nitrate, nitrite, chloride, hardness, fluoride, copper, iron, manganese, zinc, arsenic, barium, cadmium, chromium, lead, mercury, silver, selenium, sodium, color, turbidity, pH, and total coliform; and

- The raw data collected from the pump test was analyzed in order to determine the characteristic aquifer properties of the Well and presented as part of this report.

RESULTS

Installation of Bedrock Well. On June 11, 1998 GZA observed the installation of a six-inch diameter bedrock well on the south end of the parcel adjacent to the Main Gate Area. Fred Perry and Daughters drilled a total of 275 feet below the ground surface, which was recorded at 250 feet above the National Geodetic Vertical Datum (NGVD) or Mean Sea Level (MSL). Although bedrock was encountered at 38 feet below ground surface during drilling, 60 feet of casing was installed to prevent groundwater from infiltrating the well and to ensure that only

water from the bedrock would be collected in the well. A 1.5 horsepower Goulds pump capable of pumping 12 gallons per minute was installed.

Water Level Monitoring. In order to thoroughly identify potential effects that may interfere with accurate quantification of groundwater levels and the subsequent analysis of the pump test data, the following data was collected and is presented in the following figures and tables:

- **Figures 2 and 3: Water Level Monitoring of GZ-1 and MG-8**
  Water level readings were electronically recorded in the observation wells several days prior to the start of the pump test, as well as throughout the duration of the test;

- **Figure 4: Water Level Monitoring of Drinking Well**
  Water level readings were electronically recorded in the Drinking Well one day prior to the start of the pump test, as well as throughout the duration of the test; and

- **Table 1: Manual Water Level Monitoring of Adjacent Wells**
  Water level readings were manually recorded for three additional pre-existing monitoring wells throughout the duration of the pump test.

The water level data collected from the Drinking Well and the two observation wells equipped with the dataloggers seems to indicate that the groundwater table remains fairly static prior to the pump test. Once the pump test was started, the influence observed in these monitoring wells appears to be negligible. Additionally, the influence due to the potential drawdown of the pump test appears to be negligible in the manually monitored wells as well.

Determination of Aquifer Properties. Due to the lack of influence observed in the other observation and monitoring wells, the coefficient of storativity was unable to be calculated for the Drinking Well. However, the transmissivity of the Well was found to be approximately 211 gallons per day per foot (GPD/ft) using both the Theis Solution and Jacob Method. Calculations are presented in Appendix B. The specific capacity was also estimated based on an empirical relationship for a confined aquifer and was found to be approximately 0.1 gallons per minute per foot of drawdown (GPM/ft). A derived solution for specific capacity was unattainable since this characteristic property is intrinsically calculated when the coefficient of storativity is known. These calculations were also confirmed using a pump test software program, AQTESOLV.

Evaluation of Water Quality Analysis. After the 48-hour pump test, groundwater samples were collected and analyzed for water quality data. No DROs, GROs or VOCs were detected in the samples from the Drinking Well. The water quality samples were also found to predominantly contain less than the maximum permissible level [Maximum Contaminant

Level (MCL) or Maximum Exposure Guideline (MEG)] of compounds regulated by the U.S. Environmental Protection Agency (EPA) and the Maine Department of Human Services (DHS). However, the exceptions detected were concentrations of sodium (34.7 mg/L) exceeding the MCL (20 mg/L), and iron (0.67 mg/L) exceeding the Secondary MCL (0.3 mg/L). The analytical water quality data is presented in Table 2 together with more recent analytical data.

We appreciate this opportunity to be of service to you on this project. Please contact one of us should you have any questions regarding this report.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Tom Lawless

Thomas A. Lawless, C.G.
Associate Principal

TAL:rls

Attachment: Table 1 - Manual Water Level Monitoring
Table 2 - Summary of Monitoring Parameter Analyses
Figure 1 - Site Plan
Figure 2 - Water Level Data for GZ-1 Well
Figure 3 - Water Level Data for Main Gate Well
Figure 4 - Water Level Data for Drinking Well
Appendix A - Limitations
Appendix B - Pump Test Calculations
Appendix C - Analytical Laboratory Results

TABLES

FIGURES

RESULTS OF EXTENDED PUMP TEST AND AQUIFER CHARACTERIZATION DEFENSE FUEL SUPPORT POINT FACILITY CASCO BAY SOUTH HARPSWELL, MAINE

PREPARED FOR:
Defense Energy Support Center
Fort Belvoir, Virginia

PREPARED BY:
GZA GeoEnvironmental, Inc.
Portland, Maine

April 2001
File No. 25187.14

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with groundwater quality monitoring program summarized in the Work Plan. The aggregate water quality data collected during pump tests is presented in *Table 4* along with the applicable MCLs and MEGs. Analytical laboratory reports are included in *Appendix E*.

Consistent with the data collected during the 1998 pump test, DROs, GROs and VOCs were not detected above the minimum detection limits (MDLs) in the groundwater samples collected from the new water supply well, NWSW. Additionally, DROs, GROs and VOCs were not detected in the GZOW-1 couplet that was sampled to serve as a "sentry" well to indicate if any residual petroleum contaminants were being drawn toward the water supply well during the extended pump test. With the exception of sodium and iron, no exceedances of MCL/MEGs were detected in the groundwater samples collected during the pump test.

Concentrations of sodium detected in groundwater samples ranged from 16.7 to 37.5 mg/L thus exceeding the MCL of 20 mg/L. However, these sodium concentrations are considered comparable to the detected levels observed during the 1998 pump test of 34.7 mg/L.

Iron concentrations during the pump test ranged from 0.48 to 0.537 mg/L, which are similar to the detected levels observed during the 1998 pump test of 0.67 mg/L. However, an iron concentration of 4.09 mg/L was reported in the groundwater sample collected prior to the pump test. The high iron content in the groundwater sample collected prior to the pump test may potentially be attributed to stagnant well water. The reported iron concentrations in the groundwater samples collected during the pump test still exceed the secondary MCL of 0.3 mg/L; however, these concentrations decrease with the purging effect of the well and approach comparable concentrations that were observed during the 1998 pump test. It should be noted that the iron and sodium concentrations measured during the pump tests may be considered within the naturally occurring range of these elements in groundwater in the Harpswell area.

5.0 CONCLUSIONS

Based on the results of the extended pump test performed at the Defense Fuel Support Point (DFSP) facility in South Harpswell, Maine, GZA offers the following conclusions:

- Using the Theis Solution Method, the transmissivity of the aquifer was estimated to range from approximately 445 to 548 GPD/ft and the hydraulic conductivity was estimated between 0.15 and 0.18 ft/day. Slight variations in these aquifer parameters were generated using (1) different solution methods or (2) assigning an aquifer thickness other than the assumed 400 feet. The specific capacity of the aquifer was estimated at approximately 0.56 GPM/ft of drawdown, and the specific yield was estimated at roughly 0.3. Ignoring any potential contamination issues, the NWSW is easily capable of producing a sustained flow rate of 12.75 GPM.

- In general, a fairly high degree of fracture connectivity is likely across the eastern portion of the site, based on measured drawdown in the observation wells during the pump test. Variation in connectivity among overburden and bedrock wells is likely attributable to changes in geologic strata.

- During the pump test, drawdown was observed at the FWSW in the Main Gate area where residual petroleum contamination is present. The observed drawdown is indicative of some degree of fracture connectivity between the Main Gate Area and the area surrounding the NWSW.

- Based on the capture zone analysis performed using the pump test data in conjunction with a static water level round performed on March 27, 2001 and several assumptions listed in *Table 3*, the capture zone (or groundwater divide) was calculated to be approximately 1,330 feet wide. The stagnation point was calculated to be approximately 212 feet downgradient from the pumping well. As seen in *Figure 4*, the capture zone plotted over the site plan indicates that the Main Gate area, which contains residual petroleum contamination, appears to be encompassed by the estimated capture zone.

- Results of the groundwater sampling program indicate that no detections exceeding the MDL were reported for DROs, GROs and VOCs in either the NWSW or the "sentry" well couplet, GZOW-1. With the exception of sodium and iron, no exceedances of applicable MCLs or MEGs were detected in the groundwater samples collected from the NWSW. Sodium and iron exceedances are considered to be comparable to those reported during the 1998 pump test and may be considered naturally occurring in the groundwater environment.

- Because residual contamination is present in the Main Gate Area within the assumed capture zone area, it is possible petroleum contamination could be drawn toward the NWSW and eventually be detected in groundwater samples collected from the NWSW over an extended period of pumping.

MEDEP Spill Information

FILE COPY

OIL & HAZARDOUS MATERIALS REPORT FORM
Spill Number P 1196183

SUBJECT

Name (Last, First, MI): US Navy Feul Annex
Address: _____ Town: _____ State: __
Zip: ____-____ Telephone Number: (__) - ___ - ____ (Optional)

SPILL INFORMATION

Location (Town): Harpswell Spill type: A (Table A)
Amount spilled: ~ (gals, yds3, lbs, or bbls)
Type of spill: ~~43~~ (Table B) ~~03~~ 29
Date of spill: ~~__/__/__~~ (Yr/Mo/Dy) Time of spill: — (Military)
Date reported: ~~93~~ 12/16 (Yr/Mo/Dy) Time reported: 1000 (Military)
06 Cause: ~~A6~~ (Table C) Detection method: ~~5R~~ (Table D) 2I
Incident code: ~~CNAC~~ (Table E) DEP response time involved: 4 (Hours)
No. of wells at risk: 0 No. of wells impacted: 0
Investigators' names: 1. F. Braun
2. _____
3. _____

PERSON REPORTING INCIDENT

Name (Last, First, MI): Mr. Schneider
Address: _____ Town: _____ State: __
Zip: ____-____ Telephone Number: (__) - ___ - ____ (Optional)

CLEAN-UP INFORMATION

Total product recovered: 0 (gals, yds3, lbs, or bbls)
Method: ____ (Table K) Non-recyclable: 0 (gals, or bbls)
Solids combustible: 0 (yds3, or tons)
Solids non-combustible 0 yds3
Recyclable material: 0 (gals, yds3, lbs, or bbls)
Number of filters installed: 0 Number of aerators installed: 0
Disposal Information: _____

OTHER ACTIONS

Reimbursement: to SF (surface water) _ (Y or (N))
to GF (ground water) _ (Y or (N))
to HWF (haz waste) _ (Y or (N))
Third party damage claim expected: _ (Y or (N))
Enforcement referral: _ (Y or (N))

REMARKS/RECOMMENDATIONS/NARRATIVE:

(2)

See back for TRAINING & EXPOSURE

OIL SPILL REPORT FORM

Spill Case # P 196 for 1983

Spillor and Location U.S. Navy Fuel Annex Harpswell

Person Reporting Spill Mr. Schneider

Amount and Type of Product Neg. Marine Diesel

Date and Time of Spill Unk. Reported 10:00 12/16/83

Cause of Spill Leaking pipeline P or A P

Total Amount of Oil Recovered Neg. Methods Repaired pipeline

Oils - Recycleable 0 Liquids - Non-Recycleable 0

Solids - Combustible 0 Solids - Non-Combustible 0

Weather Conditions Clear

Water Course Affected Ground water

Investigator(s) F.S. Brann Incident Code G-W

REMARKS - RECOMMENDATIONS

At about 10:00, December 16, 1983, Mr. Schneider of the Naval Fuel Annex in Harpswell reported that a pipeline leak had been discovered at the Fuel Annex.

At about 15:00, I arrived on scene to check the area. I was shown a pipeline, recently un - earthed. An emergency clamp was in place. Mr. Disney advised me that plans were to patch the line. Little oil had accumulated in the soil.

I also checked the recovery system in Dike #3. Oil is still being recovered there. The recovered oil does not appear to have aged significantly. The possibility exists that Tank #4 is still leaking. At the present, no plans have been made to empty the tank and check its bottom.

I recommend no further action in the pipeline leak. The source of the oil being recovered in Dike #3 needs further investigation.

Fred S. Brann

Fred S. Brann
Oil & Hazardous Materfals Specialist I

kb

OIL & HAZARDOUS MATERIALS REPORT FORM
Spill Number P-161184

FILE COPY

SUBJECT

Name (Last, First, MI): Harpswell Feed Farm
Address: _____ Town: South Harpswell State: __
Zip: ____-____ Telephone Number: (___) - ___ - ____ (Optional)

SPILL INFORMATION

Location (Town): Harpswell Spill type: 1 (Table A)
Amount spilled: 10 (gals, yds3, lbs, or bbls)
Type of spill: 13 (Table B)
Date of spill: 84/4/16 (Yr/Mo/Dy) Time of spill: 0800 (Military)
Date reported: 84/4/16 (Yr/Mo/Dy) Time reported: 0820 (Military)
Cause: 43 (Table C) Detection method: 52 (Table D)
Incident code: C-L-L (Table E) DEP response time involved: 2.0 (Hours)
No. of wells at risk: 0 No. of wells impacted: 0
Investigators' names: 1. E. Braun
2. T. Glasgow
3. _____

PERSON REPORTING INCIDENT

Name (Last, First, MI): Disney, K
Address: _____ Town: Harpswell State: __
Zip: ____-____ Telephone Number: (___) - ___ - ____ (Optional)

CLEAN-UP INFORMATION

Total product recovered: 10 (gals, yds3, lbs, or bbls)
Method: C (Table K) Non-recyclable: 1 (gals, or bbls)
Solids combustible: 1 (yds3, or tons)
Solids non-combustible 0 yds3
Recyclable material: 0 (gals, yds3, lbs, or bbls)
Number of filters installed: 0 Number of aerators installed: 0
Disposal Information: _____

OTHER ACTIONS

Reimbursement: to SF (surface water) _ (Y or N)
to GF (ground water) _ (Y or N)
to HWF (haz waste) _ (Y or N)
Third party damage claim expected: _ (Y or N)
Enforcement referral: _ (Y or N)

REMARKS/RECOMMENDATIONS/NARRATIVE:

(5)

See back for TRAINING & EXPOSURE

NUMBER: P / 61 / 1984

1. Spillor:

a./ Name: Harpswell Fuel Farm (Last, First, MI)

b./ Address: _____ (Optional)

c./ Town: South Harpswell

d./ State: ME ; e./ Zip-Code: _____; f./ Tel. #: ___ - ___ - ____ (Optional)

2. Spill Information:

a./ Town: Harpswell ; b./ Type: 1 (1, 2, 3, or 4); (Table OHMS, #2)

c./ Amount Spilled: 10 (gals., ~~yds^3~~); d./ Hazardous Waste Number: ___

e./ Oil; __ (Table N); f./ Material State: L (G,L, or S)

g./ Concentration: 10^6 ppm;

h./ Date and Time of Spill: 84/04/16 (yy/mm/dd), 08:00 (Military)

i./ Date and Time Reported: 84/04/16 (yy/mm/dd), 08:00 (Military)

j./ Cause: A1 (Table A6); k./ Recovered or Treated: 10 (gals, ~~yds^3~~)

l./ Method: C (Table A7); m./ Recycleable Material: - (gals, yd^3, lbs)

n./ Non-Recycleable Materials: 1 (gals, ~~yds^3~~)

o./ Solids Combustible: 1 cubic yds; p./ Solids Non-Combustible - cubic yds; q./ Weather C (Table A8); r./ Disposal Info.: N/A

3. Other Information:

a./ Investigator: Brann, F.S.
Glasgow, J.S. (Last, FI, MI); b./ Incident Codes: C-L-L-W (Table W); c./ Surface Water: Y (Y or N); d./ Ground Water N (Y or N);

e./ DEP Time Involved: 2 (hours)

4. Person Reporting Incident:

a./ Name: Disney, R. (Last, FI, MI);

b./ Address: _____ (Optional);

c./ Town: Harpswell ; d./ State ME ; e./ Zip: _____

f./ Telephone #: ___ - ___ - ____ (Optional)

- OVER -

5. Other Actions:

a./ Reimbursement: to MCPF: N (Y or N); to HWF: N (Y or N); b./ Third Party Damage Claim Expected: N (Y or N); c./ Enforcement Referral: N (Y or N)

6. Nature of complaint for investigation:

A 10 gallon puddle of oil next to Tank #13.

7. Remarks/Recommendations/Narrative:

Mr. Disney has assumed the bottom of Tank #13 is leaking. He has emptied the tank and dug a test hole next to the tank. No product showed. Further investigation is being done by Fred Brann.

James S. Glasgow
Oil & Hazardous Materials Specialist I

kb

1/8

Follow-up P-61 for 1984

On May 16, 1984, I checked clean up progress of the tank leak at the Naval Fuel Farm, Harpswell. On scene I met with Mr. Disney and toured the fuel farm with him. The areas around tanks' #3, #4, #13 and #14 and the weir seperators all appeared to be in good order. Weir #1 did show some evidence of being over run during periods of high water. The area around tank #13 where the leak occurred appeared to be clean. Tank #13 is now empty and will remain so until repaired. Tanks #4 and #14 are scheduled for new bottoms this year.

Fred S. Brann

Fred S. Brann
Oil & Hazardous Materials Specialist I

kb

Enforcement ___ Reimbursement ___

FILE COPY

12/11 CB

OIL & HAZARDOUS MATERIALS REPORT FORM

Spill Number P1/00/35

SUBJECT

Name (Last, First, MI): Defense Fuel Annex
Address: PO Box 145 Town: South Harpswell State: __
Zip: ____-____ Telephone Number: (___) - ___ - ____ (Optional)

SPILL INFORMATION

Location (Town): Harpswell Spill type: 1 (Table A)
Amount spilled: 10.00 (gals, yds3, lbs, or bbls)
Type of spill: 03 (Table B)
Date of spill: 35/5/12 (Yr/Mo/Dy) Time of spill: 0900 (Military)
Date reported: 35/5/12 (Yr/Mo/Dy) Time reported: 1005 (Military)
Cause: A13 (Table C) Detection method: 54 (Table D)
Incident code: C-H-4 (Table E) DEP response time involved: 3.0 (Hours)
No. of wells at risk: 0 No. of wells impacted: 0
Investigators' names: 1. F Brann
2.
3.

YES, THIS IS OK ↓ ILG ? ~~ILG~~

PERSON REPORTING INCIDENT

Name (Last, First, MI): Schneider, W.
Address: Town: State: __
Zip: ____-____ Telephone Number: (___) - ___ - ____ (Optional)

CLEAN-UP INFORMATION

Total product recovered: 10.00 (gals, yds3, lbs, or bbls)
Method: C (Table K) Non-recyclable: _____ (gals, or bbls)
Solids combustible: 0.16 (yds3, or tons) ~~5~~ .2
Solids non-combustible _____ yds3
Recyclable material: _____ (gals, yds3, lbs, or bbls)
Number of filters installed: __ Number of aerators installed: __
Disposal Information: _____

OTHER ACTIONS

Reimbursement: to SF (surface water) _ (Y or N)
to GF (ground water) _ (Y or N)
to HWF (haz waste) _ (Y or N)
Third party damage claim expected: _ (Y or N)
Enforcement referral: _ (Y or N)

REMARKS/RECOMMENDATIONS/NARRATIVE:

See back for TRAINING & EXPOSURE

5.F

OIL & HAZARDOUS MATERIALS REPORT FORM

NUMBER: P /100 /1985

1. Spillor:

a./ Name: Defense Fuel Annex (Last, First, MI)

b./ Address: P.O. Box 145 (Optional)

c./ Town: S. Harpswell

D./ State: ME ; e./ Zip Code: ; f./Tel. #: - - (Optional)

2. Spill Information:

a./ Town: Harpswell ; b./ Type: 1 (1,2,3,4); (Table OHMS #2)

c./ Amount Spilled: 10 (gals., ~~xxxxxxxxxxxxx~~.); d./ Hazardous Waste #

e./ Oil: 03 (Table N); f./ Material State: L (G,L, or S)

g./ Concentration: 10^6 ppm

h./ Date & Time of Spill: 85/05 /02 (yy,mm,dd), 09:00 (Military)

i./ Date & Time Reported: 85/05 /02 (yy,mm,dd), 10:05 (Military)

j./ Cause: A2 (Table A6); k./ Recovered or Treated: 10 (gals., ~~yds^{3}xxxxxxx~~.)

l./ Method: C (Table A7); m./ Recycleable Materials: - (gals. yds^3., lbs.)

n./ Non-Recycleable Materials: - (gals., yds^3., or lbs.)

o./ Solids Combustible: 1/6 cubic yds.; p./ Solids Non-Combustible - cubic yards; q./ Weather A (Table A8)

r./ Disposal Information: Government Contract

3. Other Information:

a./ Investigator: Brann, F.S. (Last, Fl, MI); b./ Incident Code: C-LT-G

c./ Surface Water: N (Y or N); d./ Ground Water: Y (Y or N);

e./ DEP Time Involved 3 (hours)

4. Person Reporting Incident:

ENTERED

a./ Name: Schneider, W. (Last, FI, MI)

b./ Address: P.O. Box 148 (Optional)

c./ Town: Harpswell : d./ State e./Zip:

f./ Telephone #: - - (opt.)

L. PETERSEN

PORTLAND REGIONAL OFFICE OIL SPILL REPORT FORM

This form should be filled out by the spiller and returned (X) to the Department of Environmental Protection within ten (10) days. Please mail to: D.E.P., Division of Oil Conveyance Services, 21 Vocational Drive, South Portland, ME 04106

DATE & TIME OF SPILL: MAY 2, 1985 - 0900

NAME & ADDRESS OF PARTIES INVOLVED: PETROLEUM OPERATIONS & SUPPORT SERVICES INC. P.O. BOX 148 S. HARPSWELL, MAINE 04079 (DFSP, CASCO BAY, MAINE)

EXACT LOCATION OF SPILL: 10' SOUTH OF NORTH BERM FOR TANK #1

AMOUNT AND TYPE OF OIL DISCHARGED: LESS THAN 10 GALS. OF DIESEL FUEL MARINE

COMPLETE DESCRIPTION OF CIRCUMSTANCES CAUSING DISCHARGE:

1/4" LEAK IN THE BOTTOM OF AN 8" LINE. A LARGE ROCK WAS RESTING AGAINST THE LINE CAUSING THE PIPLINE COATING TO BE WORN AWAY.

AMOUNT OF OIL RECOVERED: LESS THAN 10 GALS. (95%) METHOD: OIL SORBENT PADS

LOCATION AND METHOD OF OILY DEBRIS DISPOSAL: SORBENT PADS WERE RINGED OUT FOR RE-USE. OIL WAS DISPOSED OF IN TERMINAL SLOP TANK

NAME AND ADDRESS OF ANY PERSON, FIRM OR CORPORATION SUFFERING DAMAGES: NONE

PROCEDURES, METHOD, AND PRECAUTIONS INSTITUTED TO PREVENT A SIMILAR OCCURRENCE FROM RECURRING:

A SADDLE WAS WELDED OVER THE HOLE TO PREVENT RECURRING PROBLEMS.

ADDITIONAL COMMENTS: ALL FUEL WAS CONTAINED IN THE IMMEDIATE AREA AND DID NOT ENTER ANY WATERWAY.

REPORT PREPARED BY: WM R. SCHNEIDER

FILE COPY

JLN 1-28-87

ORIGINAL

OIL & HAZARDOUS MATERIALS REPORT FORM
Spill Number P/26885

SUBJECT

Name (Last, First, MI): Tenco Service Inc.
Address: Harpswell Fuel Annex Town: Harpswell State: ME
Zip: ____-____ Telephone Number: (___) - ___ - ____ (Optional)

SPILL INFORMATION

Location (Town): Harpswell Spill type: 1 (Table A)
Amount spilled: 50 (gals, yds3, lbs, or bbls)
Type of spill: 07 (Table B)
Date of spill: 85/10/08 (Yr/Mo/Dy) Time of spill: 0805 (Military)
Date reported: 85/10/08 (Yr/Mo/Dy) Time reported: ____ (Military)
Cause: A3 (Table C) Detection method: 52 (Table D)
Incident code: CLIG (Table E) DEP response time involved: 6 (Hours)
No. of wells at risk: ___ No. of wells impacted: ___
Investigators' names: 1. Brann, F.S.
2. _____
3. _____

PERSON REPORTING INCIDENT

Name (Last, First, MI): Disney, Richard
Address: P.O. Box 148 Town: So. Harpswell State: ME
Zip: ____-____ Telephone Number: (___) - ___ - ____ (Optional)

CLEAN-UP INFORMATION

Total product recovered: 56 (gals, yds3, lbs, or bbls)
Method: C (Table K) Non-recyclable: _____ (gals, or bbls)
Solids combustible: 1 (yds3, or tons)
Solids non-combustible _____ yds3
Recyclable material: _____ (gals, yds3, lbs, or bbls)
Number of filters installed: ___ Number of aerators installed: ___
Disposal Information: to Navy storage and contractor transport

OTHER ACTIONS

Reimbursement: to SF (surface water) N (Y or N)
to GF (ground water) N (Y or N)
to HWF (haz waste) N (Y or N)
Third party damage claim expected: N (Y or N)
Enforcement referral: N (Y or N)

REMARKS/RECOMMENDATIONS/NARRATIVE:

(6)

See back for TRAINING & EXPOSURE

S.L

REPORT FORM

NUMBER: P/ 265/ 1985

1. Spillor:

a./ Name: Tenco Service Inc. (Last, First, MI)

b./ Address: Harpswell Fuel Annex (Optional)

c./ Town: Harpswell

D./ State: ME ; e./ Zip Code: ; f./Tel. #: - - (Optional)

2. Spill Information:

a./ Town: Harpswell ; b./ Type: 1 (1,2,3,4); (Table OHMS #2)

c./ Amount Spilled: 50 (gals., ~~yds³~~ lbs.); d./ Hazardous Waste #

e./ Oil: 81 (Table N); f./ Material State: L (G,L, or S)

g./ Concentration: ppm

h./ Date & Time of Spill: 85/ 10 / 08 (yy,mm,dd), 08:05 (Military)

i./ Date & Time Reported: 85/ 10 /08 (yy,mm,dd), (Military)

j./ Cause: A1 (Table A6); k./ Recovered or Treated: 50 (gals., ~~yds³~~)

l./ Method: C (Table A7); m./ Recycleable Materials: 0 (gals. yds³., lbs.)

n./ Non-Recycleable Materials: 0 (gals., yds³., or lbs.)

o./ Solids Combustible: 1 cubic yds.; p./ Solids Non-Combustible 0 cubic yards; q./ Weather A (Table A8)

r./ Disposal Information: to Navy storage and contractor transport

3. Other Information:

a./ Investigator: Brann, F.S. (Last, FI, MI); b./ Incident Code: C-LI-W

c./ Surface Water: Y (Y or N); d./ Ground Water: N (Y or N);

e./ DEP Time Involved 6 (hours)

4. Person Reporting Incident:

a./ Name: Disney, Richard (Last, FI, MI)

b./ Address: P.O. Box 148 (Optional)

c./ Town: So. Harpswell : d./ State e./Zip:

f./ Telephone #: - - (opt.)

5. Other Actions:

a./ Reimbursement: to MCPF: N (Y or N); to HWF: N (Y or N); b./ Third Party Damage Claim Expected: N (Y or N); c./ Enforcement Referral: N (Y-N)

6. Nature of Complaint or Investigation:

#9 tank at Naval Fuel Annex in Harpswell leaking from the bottom.

7. Remarks/Recommendations/Narrative:

I went to Harpswell to investigate. On-scene I met Mr. Disney and viewed the area. The leak had slowed as material was removed from the tank. Containment was in place.

No further action is necessary.

Fred S. Brann
Oil & Hazardous Materials Specialist I

kb

OIL SPILL REPORT FORM

This form should be filled out by the spiller and returned to the Department of Environmental Protection within ten (10) days. Please mail to: D.E.P., Division of Oil Conveyance Services, 21 Vocational Drive, South Portland, ME 04106

DATE & TIME OF SPILL: 9 OCTOBER 1985 0805

NAME & ADDRESS OF PARTIES INVOLVED: DEFENSE FUEL SUPPORT POINT, RTE 123 P.O. BOX 148, SOUTH HARPSWELL, MAINE 04079

EXACT LOCATION OF SPILL: TANK #9 BOTTOM

AMOUNT AND TYPE OF OIL DISCHARGED: LESS THAN 50 GAL. JP-5

COMPLETE DESCRIPTION OF CIRCUMSTANCES CAUSING DISCHARGE: LEAK DISCOVERED COMMING FROM BETWEEN TANK #9 BOTTOM & CONCRETE RING FOUNDATION. TRANSFERRED PRODUCT TO ANOTHER STORAGE TANK, PUT WATER BOTTOM IN BERM, CLEANED UP JP-5 WITH SORBENT MATERIALS. TOOK TANK OUT OF SERVICE.

AMOUNT OF OIL RECOVERED: 85 - 100 % METHOD: SORBENT MATERIALS

LOCATION AND METHOD OF OILY DEBRIS DISPOSAL: STRAWBERRY CREEK RECYCLING CENTER - BURN IN INCINERATOR

NAME AND ADDRESS OF ANY PERSON, FIRM OR CORPORATION SUFFERING DAMAGES: NONE

PROCEDURES, METHOD, AND PRECAUTIONS INSTITUTED TO PREVENT A SIMILAR OCCURRENCE FROM RECURRING: TANK EMPTIED FOR REPAIR - PROJECT UNDER STUDY BY DFSC TO REPAIR/REPLACE ALL TANK BOTTOMS AT DFSP CASCO BAY

ADDITIONAL COMMENTS: NONE

REPORT PREPARED BY: Richard L. Young Jr.
TERMINAL SUPERINTENDENT

TENCO Services, Inc.
"Service is our Middle Name"
P.O. BOX 148
SO. HARPSWELL, ME 04079
207-833-6232

October 9, 1985

Ms. Kathryn R. Munno, ACO
DFSC-PPB
Cameron Station
Alexandria, VA 22304-6160

RE: Contract DLA-600-85-C-0245, Clause C-5.7.5
SPCC Plan DFSP CASCO BAY, ME

1. TENCO Services, Inc.
P.O. Box 148
So. Harpswell, ME 04079
(207) 833-6232

2. DFSP Casco Bay
P.O. Box 148, Rte. 123
So. Harpswell, ME 04079
(207) 833-6232

3. 9 OCTOBER 1985

4. 8 OCTOBER 1985

5. At 0805 OCT 1985, the Chief Operator discovered fuel seeping from between the bottom of Tank # 9 and the concrete foundation ring. The berm was flooded with a water bottom, sorbent material was placed around the perimeter of tank, and the product was transferred into another storage tank. When the product level in Tank # 9 dropped one foot during the transfer, the leak stopped. All required agencies were notified. State of Maine D.E.P. visited the site 8 OCTOBER 1985 and were satisfied with containment and transfer procedures. Tank # 9 has been taken out of service until repairs can be made.

6. Tank bottom leak.

7. JP-5, less than 50 gals.

8. None

9. None

10. DFR-NE - Leon Petersen, COR
USCG, MSO Petty Officer Cass
State of Maine D.E.P. - Fred Brann

11. A. 65°
    B. Wind from S.W. - 5 to 10 knts.
    C. Partly sunny

12. Cleaned with sorbent materials.

13. None

14. None

15. None

16. None

Sincerely,

Richard F. Disney, Sr.
Terminal Superintendent

cc: DFR-NE
D.E.P.
TENCO Services, Inc. - H.O.
File

JLN
1-28-87

OIL & HAZARDOUS MATERIALS REPORT FORM
Spill Number P/313 1985

SUBJECT

Name (Last, First, MI): Defense Fuel Support Point
Address: Rt 123, P.O. Box 148 Town: So. Harpswell State: ME
Zip: 04074 Telephone Number: ( ) - - (Optional)

SPILL INFORMATION

Location (Town): Harpswell Spill type: 1 (Table A)
Amount spilled: 170 (gals, yds3, lbs, or bbls)
Type of spill: 40 (Table B)
Date of spill: 85/10/28 (Yr/Mo/Dy) Time of spill: 10:00 (Military)
Date reported: 85/10/28 (Yr/Mo/Dy) Time reported: 11:00 (Military)
Cause: A3 (Table C) Detection method: 52 (Table D)
Incident code: CLIL (Table E) DEP response time involved: 2 (Hours)
No. of wells at risk: No. of wells impacted:
Investigators' names: 1. Eufemia, S.I.
2.
3.

PERSON REPORTING INCIDENT

Name (Last, First, MI): Disney, Richard
Address: D.F.S.P. Town: State:
Zip: - Telephone Number: ( ) - - (Optional)

CLEAN-UP INFORMATION

Total product recovered: 150 (gals, yds3, lbs, or bbls)
Method: C (Table K) Non-recyclable: (gals, or bbls)
Solids combustible: (yds3, or tons)
Solids non-combustible yds3
Recyclable material: (gals, yds3, lbs, or bbls)
Number of filters installed: Number of aerators installed:
Disposal Information: Incineration at Strawberry Creek Recycling Center, Harpswell

OTHER ACTIONS

Reimbursement: to SF (surface water) N (Y or N)
to GF (ground water) N (Y or N)
to HWF (haz waste) N (Y or N)
Third party damage claim expected: N (Y or N)
Enforcement referral: N (Y or N)

REMARKS/RECOMMENDATIONS/NARRATIVE:

4

See back for TRAINING & EXPOSURE

OIL & HAZARDOUS MATERIALS REPORT FORM

SUBJECT: NUMBER P-/313/1985

Name:(Last,First,MI) Defense Fuel Support Point

Address: Rt. 123, P.O. Box 148 Town: So. Harpswell

State: ME ; Zip-Code: 04079 ; Tel. #: ( ) - - (Optional)

SPILL INFORMATION:

Town: Harpswell ; Type: 1 (1, 2, 3, or 4); (Table A)

Amount Spilled: 170 (gals., ~~yds3,lbs,or bbls~~); Type of Oil 81 (Table B)

Date of Spill: 85/ 10 /28 (yy/mm/dd),Time of Spill 10:00 (Military)

Date Reported: 85/ 10 /28 (yy/mm/dd),Time Reported 11:00 (Military)

Cause: A2 (Table C); Detection Method: 2 (Table D);

OTHER INFORMATION:

Investigator:(Last,FI,MI) Eufemia, S.J. Incident Code: C-LI-I (Table E)

Coastal Surface Water: N (Y or N); Inland Surface Water: N (Y or N);

Groundwater: N (Y or N); DEP Time Involved: 2 (Hours)

Hands On Training Credits: (Table F) Cat. Hrs. ; Cat. Hrs. ; Cat. Hrs. ; Cat. Hrs. ;Cat. Hrs. ; Cat. Hrs. ; Cat. Hrs. ; Cat. Hrs. :

PERSON REPORTING INCIDENT:

Name:(Last,First,MI) Disney, Richard

Address: D.F.S.P. (above) Town: ;

State: ; Zip-Code: Tel. #: - -

OTHER ACTIONS:

Reimbursement: to SF (Surface Water): N (Y or N) / GF (Groundwater): N (Y or N)

to HWF: N (Y or N) / Third Party Damage Claim Expected: N (Y or N);

Enforcement Referral: N (Y or N)

CLEAN-UP INFORMATION

Recovered or Treated: 150 (gals., ~~yds3,lbs,or bbls~~).Method: C (Table G);

Non-Recyclable Material: (gals.,yds3,lbs,bbls) Solids Combustible: (yds3)

Solid Non-Combustible: (yds3);Recyclable Material: (gals.,yds3,lbs,bbls)

Disposal Information: Incineration at Strawberry Creek Recycling Center, Harpswell

NDERGROUND TANK NFORMATION	I	II	III	IV	V	VI
ST Registration #						
ize of Tank						
ank Construction (Table H)						
ank Age (Table I)						
iping Construction (Table J)						

NATURE OF COMPLAINT FOR INVESTIGATION:

Pipeline leak at Defense Fuel Support Point, Harpswell

REMARKS/RECOMMENDATIONS/NARRATIVE:

See attached report.

Steven J. Eufemia
Oil & Hazardous Materials Specialist III

kb

PORTLAND REGIONAL OFFICE OIL SPILL REPORT FORM

This form should be filled out by the spiller and returned to the Department of Environmental Protection within ten (10) days. Please mail to: D.E.P., Division of Oil Conveyance Services, 21 Vocational Drive, South Portland, ME 04106

DATE & TIME OF SPILL: 28 OCTOBER 1985 1000

NAME & ADDRESS OF PARTIES INVOLVED: DEFENSE FUEL SUPPORT POINT, RTE 123 P.O. BOX 148, SO. HARPSWELL, ME. 04079

EXACT LOCATION OF SPILL: 12" PIPELINE NEXT TO TANK #1

AMOUNT AND TYPE OF OIL DISCHARGED: 150-170 GALS. JP-5

COMPLETE DESCRIPTION OF CIRCUMSTANCES CAUSING DISCHARGE: LEAK FOUND AROUND PIPES ADJACENT TO TANK #1. AREA WAS DUG-UP AND A 1/4" HOLE WAS DISCOVERED ON THE JP-5 PIPE. A PLUG WAS INSERTED AND SADDLE PATCH WELDED OVER AFFECTED AREA. PIPELINE RECOATED, COVERED WITH SAND, REBURIED, & GRADED. CAUSED BY A SMALL ROCK AGAINST THE PIPE FOR 30 YEARS PLUS.

AMOUNT OF OIL RECOVERED: 150 GAL METHOD: SORBENT MAT'LS.

LOCATION AND METHOD OF OILY DEBRIS DISPOSAL: STRAWBERRY CREEK RECYCLING CENTER - BURNED IN INCINERATOR

NAME AND ADDRESS OF ANY PERSON, FIRM OR CORPORATION SUFFERING DAMAGES: NONE

PROCEDURES, METHOD, AND PRECAUTIONS INSTITUTED TO PREVENT A SIMILAR OCCURRENCE FROM RECURRING: CATHODIC PROTECTION BEING INSTALLED TO PREVENT CORROSION OF PIPELINES UNDERGROUND

ADDITIONAL COMMENTS: NONE

REPORT PREPARED BY: Richard L. Losing Sr.
TERMINAL SUPERINTENDENT.

FILE COPY

Oil & Hazardous Materials Report Form
Spill Number: P/245/90

ubject:
Name (Last, First MI): DEFENSE FUEL SUPPLY CENTER
Address: P.O. BOX 148 Town: SOUTH HARPSWELL
State: ME Zip-code: _____ Telephone: 2078336232

pill Information:
Location (Town): HARPSWELL Spill Type: B
Amount spilled: 0.00 gals.Y cu. yds.N lbs.N bbls.N
Type of spill: 23
Date of Spill: 90/04/25 (yy/mm/dd) Time of Spill: ____ (Military)
Date Reported: 90/04/25 (yy/mm/dd) Time Reported: 1000 (Military)
Cause: 03 Detection method: 6J
Incident code: CBPS DEP response time involved: 10.0 (hours)
Number of wells at risk: 0 Number of wells impacted: 0
Investigators' names: 1. DUNLAP, JOHN
2. _____
3. _____

erson Reporting Incident:
Name (Last, First MI): GRINDER, HARRY W. SUPERINTENDT
Address: P.O.BOX 148 Town: HARPSWELL
State: ME Zip-code: _____ Telephone: 2078336232

Oil & Hazardous Materials Report Form

ean-up Information:

Total product recovered: 600.00 gals.Y cu. yds.N lbs.N bbls.N
Method: G Non-recyclable: 0.00 gals.Y bbls.N
Solids: combustible: 0.0 cu. yds.Y tonsN
non-combustible: 0.0 cu.yds.
Recyclable material: 0.00 gals.Y cu. yds.N lbs.N bbls.N
Number of filters installed: 0 Number of aerators installed: 0
Disposal information:
LANDSPREAD ON SITE

her Actions:

Reimbursement: to SF (surface water): N (Y/N)
to GF (ground water): N (Y/N)
to HWF (haz waste): N (Y/N)
Third party damage claim expected: N (Y/N)
Enforcement Referral: N (Y/N)

✓

Underground Tank Information

Spill number: 9405 96

	UST Reg. No.	Tank Size	Tank cont.	Tank use	Piping type	Date tank
Tank 1	6452	1000	A	E	L	93
Tank 2						
Tank 3						
Tank 4						
Tank 5						
Tank 6						
Tank 7						
Tank 8						
Tank 9						
Tank 10						
Tank 11						
Tank 12						
Tank 13						
Tank 14						
Tank 15						
Tank 16						
Tank 17						
Tank 18						
Tank 19						
Tank 20						

P245/90JD
Defence fuel Supply Center

At approximately 1230 hours on April 25, 1990. DEP representative visited the site of a tank removal at Defence Fuel Supply Center, South Harpswell, Maine.

Clean Harbors was contracted to remove the thousand gallon gas tank and when uncovering the soil from around the tank gasoline odor was experienced. HNU reading of the soil indicated soil contaminated with 200-300 ppm HNU readings.

Talking with Harry Grinder, Terminal Superintendent it was agreed to landspread the soil in one of the berms used for one of the storage tank, which is empty.

After the soil from around the tank excavation was removed, under the direction of Groundwater Tech, it was noticed that high reading on the HNU around the pump foundation area.

Excavation of this area lead to more contamination which seemed to be contributed to the leaking piping. What I could see was product had migrated along the road bed surface the length of the tank excavation and beyond and through excavation had migrated under the road to a width of six (6) feet and depth of four (4) feet.

At this point it was agreed upon to have Groundwater Tech. do a soil gas survey of the area to see the extent of the contamination. A letter of intent from the DEP was put together stating what I would like to see happen at the site with remediation depending on GTI findings.

On April 26, 1990, the soil gas survey was done indicating contamination extending further out in a westerly direction and to the north.

Four foot strip along excavation closest to road to stay open until decision is made on remediation of road area.

Meeting with Husan Dogru'l Env. Remediation studies, DFSC, Wednesday 5/7/90 along with GTI on recent soil gas analysis.

5/2/90:
Removal of contaminated soil taking place along area of tank excavation next to road bed back towards the north approximately 50' in length eight (8) feet in depth.

Contamination seems to follow along old pipeline trench to storage building 130 N.

Removal of soil along storm drainage trench taking place. Levels of contamination range from 75-120 ppm HNU readings cutting into road about 10-15 feet ran into salt water fire hydrant line. At this point along and beyond line of contamination levels drop to 8 to 10 ppm, is a good stopping point for removal.

5/4/90:
Soil removal from site estimated at around 400-500 yards of material. Product was found to travel along salt water fire line which runs horizontly along the original tank excavation. HNU reading of soil removed were in the range of 100-150 ppm. Soil in the range of 50-75 ppm has been allowed to remain first due to the low sensitivity of the area along with the monitoring locations around the site.

5/7/90:
Soil removal at the Fuel Supply Center has been completed with permission to fill in excavation.

5/8/90:
Site visit showed water in excavation which will be pumped out. I met with Kevin Malloy and Harry Grinder of DFSC who mentioned Portland Pump will be by in the afternoon to repair drain line. Hole will be pumped off of water so clean backfill can be put in place.

Storage of soil in berm #4 will be covered until site assessment have been completed whereby soil will than be spreadout to aerate.

5/9/90:
Meeting with Hason Degru'l, remediation studies on removal of soil from gasoline tank site. It is understood that soil will stay in Berm #4 until Environmental studies has been completed. Discussion as to handling soil will be further studied after Environmental Assessment.

I see no further action at this time with notification to aeration of soil later in the summer

7/24/90:
I spoke with Harry Grinder Terminal Superintendent concerning soil aeration on site. Soil spreading agreement letter has been given to him to present to the town. It was agreed to have the soil turned every other week using a roto-tiller.

No further action at this time.

JOHN M. DUNLAP III
Oil & Hazardous Materials Specialist
Bureau of Oil & Hazardous Materials

JMD/mj

cc: file
yellow

Oil & Hazardous Materials Report Form
Spill Number: P/677/91

Subject:
Name (Last, First MI): DFSP CASCO BAY
Address: RT 123, PO BOX 148 Town: HARPSWELL
State: ME Zip-code: 04074 Telephone: 2078336232

Spill Information:
Location (Town): HARPSWELL Spill Type: B
Amount spilled: 40.90 gals.Y cu. yds.N lbs.N bbls.N
Type of spill: 01
Date of Spill: 91/11/18 (yy/mm/dd) Time of Spill: ____ (Military)
Date Reported: 91/11/18 (yy/mm/dd) Time Reported: ____ (Military)
Cause: 05 Detection method: 6J
Incident code: CLIGU DEP response time involved: 10.0 (hours)
Number of wells at risk: 0 Number of wells impacted: 0
Investigators' names: 1. BREZINSKI, S.G.
2. KASELIS, RICK
3. _____

Person Reporting Incident:
Name (Last, First MI): GRINDER, HARRY
Address: OFSF CASCO BAY Town: HARPSWELL
State: ME Zip-code: _____ Telephone: 2078336232

Oil & Hazardous Materials Report Form
Spill Number: P/677/91 (continued)

Clean-up Information:

Total product recovered: 30.90 gals.Y cu. yds.N lbs.N bbls.N
Method: G Non-recyclable: _____ gals.N bbls.N
Solids: combustible: _____ cu. yds.N tonsN
non-combustible: _____ cu.yds.
Recyclable material: _____ gals.N cu. yds.N lbs.N bbls.N
Number of filters installed: 0 Number of aerators installed: 0
Disposal information:
LANDFARMED ON SITE

Other Actions:

Reimbursement: to SF (surface water): N (Y/N)
to GF (ground water): N (Y/N)
to HWF (haz waste): N (Y/N)
Third party damage claim expected: N (Y/N)
Enforcement Referral: N (Y/N)

P677/91SB
DFSP Casco Bay (Harpswell)

11/18/91, Marianne of Pollution Control Service reported to Sheryl Smith that they'd encountered petroleum soil (PCS) while removing UST's at the DFSP Terminal in Harpswell.

11/19/91, I met on site at 0800 with Harry Grinder (terminal mgr) and with Mark Guiren (Pollution Control). On site I observed:

a) At building no 172/tank 4, about five yards of no. 2 pcs was piled under poly that Pollution Control had determined was contaminated and excavated. The pcs was largely clay with a mild no 2 oil odor. (Though the Removal Notice lists this and other as waste/used oil tanks, actual contents was runoff JP-5 oil that dripped out of pumps. No waste motor/lub oil is believed to have been stored in these UST's.
b) At bldg 173 (pumphouse 3) was UST no 11 which Guerin and Grinder explained had free product leakage when the back-hoe punctured the UST at removal. The free product was largely cleaned-up with a sheen remaining. About 20 to 30 yds^3 of soil had been dug out by Pollution Control as PCS. Groundwater was stable at about 4 feet below grade and the 10" product piping was visible. This UST was buried 7' deep and under the product piping.
c) At bldg 174, tank 4 suffered a rupture when the clay drain pipe to the UST was broken by the backhoe. About five gallons of fresh JP-5 was recovered from the groundwater with pads. See attachment A for action taken. About 100 cubic yards were excavated from this location, including about 3 yds of a surface spillage.

As of 11/26/91, about 130 yds of contam. soil is being landfarmed in berms **5** (see attachment), with approval of myself and Rick Kaselis. Over the course of this investigation I have kept in contact with Kaselis and Beane of the Dept who are evaluating the overall picture and clean-up of this terminal which is scheduled by DOD for closure in the future.

A visit this day showed a sheen with small globules of oil atop the water in the new well over where tank 9 was located. At this point I recommend further investigation.

S. Brezinski 2/13/92
STEPHEN G. BREZINSKI
Oil & Hazardous Materials Specialist I
Bureau of Hazardous Materials & Solid Waste Control

SGB/mj

cc: file/dblue

TANK ABANDONMENT INFORMATION

SPILL NUMBER P - 677 - 91 DATE OF INVESTIGATION 91 / 11 / 18

Facility name DFSP Casco Bay
Address Harpswell ME
Phone Number
Contractor name Pollution Control Svcs
Address Gorham ME
Phone number

✓ 30 day notice provided ____ Less than 10 days provided
____ Notice waived ____ No notice given

*** PLEASE CHECK (✓) APPROPRIATE FIELDS ***

Samples taken : SOIL ___ GROUNDWATER ___ TANK CONTENTS ___ PHOTOGRAPHS TAKEN ___

Please number the tanks viewed	~~4~~	5	6	7	8
General Tank Information		6452			
UST Reg. #	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~
Size of Tank	500	10,000	5,000	5000	1000
Tank Construction (Tbl L)	A	E	A	A	A
Tank Age (Tbl M)	7	2	7	7	
Piping Const. (Tbl L)	L	A	A	A	
Status (Tbl P)	Ab	Ab	Ab	Ab	
Tank Condition					
Holes observed	Y	N	~~Y~~		
More than 10 holes					
Tank not observed			Y	Y	
Pipe Condition					
Piping not to Regulation					
No leaks observed					
Broken fittings					
Leaking fittings					
Corrosion leaks					
Piping removed	Y	Y	Y	Y	Y
Piping not observed					
Tank Installastion Condition					
Tank on bedrock					
Tank within 3' of bedrock					
Water table seen in hole	Y	Y	Y	Y	Y
Back filled with sand					
" " w/ crushed stone					
Non standard fill used	Y	Y	Y	Y	Y
Soil Contamination					
No contamination observed		Y	Y	Y	Y
Odor only noted	Y				
Soil contaminated	Y				
Free product observed	~~N~~ Y				
Distance to Drinking Water					
Public supply within 1000'	N	N	N	N	N
Nearest private supply within 300' not owned by the tank owner.	N	N	N	N	N
Tank Contents					
Reg. gasoline					
Leaded gasoline					
#2 Fuel or Diesel	~~#~~		Y	Y	~~#~~
#6 oil					
Other	JP 5	JP-5			JP5

If more than five tanks are observed use the back of another spill report and use "Page ___ of ___" to track all the pages used. **Remember to put the Spill Number at the top of each new page.**

Page 2 of ____

TANK ABANDONMENT INFORMATION

SPILL NUMBER P - 677 - 91 DATE OF INVESTIGATION ___ / ___ / ___

Facility name DFSP Casco Bay
Address Harpswell ME
Phone Number
Contractor name Pollution Control Svcs
Address Gorham ME
Phone number

✓ 30 day notice provided ____ Less than 10 days provided
____ Notice waived ____ No notice given

*** PLEASE CHECK (✓) APPROPRIATE FIELDS ***

Samples taken : SOIL ___ GROUNDWATER ___ TANK CONTENTS ___ PHOTOGRAPHS TAKEN ___

Please number the tanks viewed	9	11	12	3	
General Tank Information					
UST Reg. #	6452				
Size of Tank	500 ~~1000~~	500	4000	10,000	~~10,000~~
Tank Construction (Tbl L)	A	A	A	C	~~C~~
Tank Age (Tbl M)	7	7	2	2	~~2~~
Piping Const. (Tbl L)	L	L	M	M	~~M~~
Status (Tbl P)	Ab	Ab	Ab	Ab	
Tank Condition					
Holes observed	Y	Y			
More than 10 holes					
Tank not observed			Y	Y	
Pipe Condition					
Piping not to Regulation					
No leaks observed					
Broken fittings					
Leaking fittings					
Corrosion leaks					
Piping removed	Y	Y	Y		
Piping not observed					
Tank Installastion Condition					
Tank on bedrock					
Tank within 3' of bedrock	Y	Y			
Water table seen in hole	Y	Y	Y		
Back filled with sand					
" " w/ crushed stone					
Non standard fill used					
Soil Contamination					
No contamination observed			unk	unk	
Odor only noted					
Soil contaminated	Y	Y			
Free product observed	Y	Y			
Distance to Drinking Water					
Public supply within 1000'	N	N	N	N	
Nearest private supply within 300' not owned by the tank owner.	N	N	N	N	
Tank Contents					
Reg. gasoline					
Leaded gasoline					
#2 Fuel or Diesel					
#6 oil					
Other	JP-5	JP-5	JP-5	JP-5	

If more than five tanks are observed use the back of another spill report and use "Page ___ of ___" to track all the pages used. **Remember to put the Spill Number at the top of each new page.**

Page 3 of ___

Underground Tank Information
Spill number: P/677/91

	UST Reg. No.	Tank size	Tank cons.	Tank age	Piping cons.	Status
Tank 1	6452-____	500	A	7	L	AB
Tank 2	6452-____	10000	E	2	A	AB
Tank 3	6452-____	5000	A	7	A	AB
Tank 4	6452-____	5000	A	7	A	AB
Tank 5	6452-____	1000	A			
Tank 6	6452-____	500	A	7	L	AB
Tank 7	6452-____	500	A	7	L	AB
Tank 8	6452-____	4000	A	2	M	AB
Tank 9	6452-____	10000	C	2	M	AB
Tank 10	____-____	____	_	_	_	__
Tank 11	____-____	____	_	_	_	__
Tank 12	____-____	____	_	_	_	__
Tank 13	____-____	____	_	_	_	__
Tank 14	____-____	____	_	_	_	__
Tank 15	____-____	____	_	_	_	__
Tank 16	____-____	____	_	_	_	__
Tank 17	____-____	____	_	_	_	__
Tank 18	____-____	____	_	_	_	__
Tank 19	____-____	____	_	_	_	__
Tank 20	____-____	____	_	_	_	__

Date of Certificate:

OCTOBER 18, 1991

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

UNDERGROUND STORAGE TANK FACILITY REGISTRATION FORM

Please display this certificate in a visible location at the registered facility.

Facility:

DEF. FUEL SER. CTR. CASCO BAY
ROUTE 123
HARPSWELL
ME 04074

Facility Registration Number: 6452

Date of Registration: SEPTEMBER 23, 1986

Operator:

CONTINENTAL SERVICES, INC.
P.O. BOX 148
HARPSWELL
ME 04079

Sensitive Area Status:

NONE

Owner:

DEFENSE FUEL SUPPLY CENTER
CAMERON STATION
ALEXANDRIA
VA 223046160

Facility Use:

OIL STORAGE/FEDERAL FACILITY

Number of Tanks: 9
(See accompanying list for detailed breakdown)

IF THE INFORMATION ON THIS FORM IS ACCURATE AND COMPLETE, PLEASE RETAIN FOR YOUR RECORDS.

The Maine Department of Environmental Protection must be notified of any errors or changes in the information on this form. To accomplish this, please draw a line through the incorrect or outdated information, insert the correct information, and return this form to:

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF OIL AND HAZARDOUS MATERIALS CONTROL
STATE HOUSE STATION #17
AUGUSTA, MAINE 04333
ATTN: Underground Tanks Program

If you have any questions concerning this process, please call (207)289-2651 and ask for the administrator of the Underground Storage Tanks program.

p-677-91

INDIVIDUAL TANK DATA
FOR
SITE NUMBER:

6452

TANK NUMBER	TANK TYPE	PIPING TYPE	TANK SIZE	ADDITIONAL MONITORING	PRODUCT STORED	DATE INSTALLED	TANK STATUS
1	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	FUEL OIL #2	9/52	REMOVED
2	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	FUEL OIL #2	9/52	REMOVED
3	STEEL/CATH PROTECTION	STEEL/CATH PROTECTION	1,000	NONE	WASTE/ USED OIL	6/85	ACTIVE
4	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	WASTE/ USED OIL	9/52	REMOVAL PLANNED
5	FRP/FIBER-GLASS	GALVANIZED STEEL	10,000	NONE	WASTE/ USED OIL	9/82	ACTIVE
6	STEEL/BARE ASPHALT	GALVANIZED STEEL	5,000	NONE	DIESEL	9/52	REMOVAL PLANNED
7	STEEL/BARE ASPHALT	GALVANIZED STEEL	5,000	NONE	DIESEL	9/52	REMOVAL PLANNED
8	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	WASTE/ USED OIL	9/52	REMOVAL PLANNED
9	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	WASTE/ USED OIL	9/52	REMOVAL PLANNED
10	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	REGULAR	6/62	REMOVED
11	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	WASTE/ USED OIL	9/52	REMOVAL PLANNED
12	STEEL/CATH PROTECTION	STEEL/CATH PROTECTION	4,000	NONE	WASTE/ USED OIL	7/85	REMOVAL PLANNED
13	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	FUEL OIL #2	9/52	REMOVED
14	STEEL/BARE ASPHALT	GALVANIZED STEEL	1,000	NONE	FUEL OIL #2	9/52	REMOVED
15	OTHER	OTHER	1,000	NONE	UNKNOWN	NK/NK	REMOVED

Tanks out Page 1 of 2
visited by SEB p-677-91 11/19/91

RECEIVED OCT 1991 Dept. of Environmental Protection

Maine Department of Environmental Protection
Bureau of Oil & Hazardous Materials Control
State House Station #17, Augusta, Maine 04333
Telephone: 207-289-2651
Attn: Tank Removal Notice

NOTICE OF INTENT
TO ABANDON (REMOVE) AN
UNDERGROUND OIL STORAGE FACILITY

Name of Facility Owner: Defense Fuel Supply Center
Mailing Address: P.O. Box 148 Telephone No: 207-833-6232
City: Harpswell State: ME Zip Code: 04079
Contact Person (name, address & telephone no.): Nancy Anderson - P.O. Box 148 Harpswell, ME 207-833-6232
Name of Facility: Def. Fuel Spl. Ctr. Casco Bay Registration No.: 6452
Facility Location: Route 123 Harpswell, ME

1. Identify the tanks at this location which are to be removed:

	Tank Number	Age of Tank (Years)	Tank Size (Gallons)	Type of Product Most Recently Stored
A.	4 Bld 172	39	~~1,000~~ ✓500	WASTE/USED OIL
B.	5 Truck rack	9	10,000 ✓ FRP	↓
C.	6 Bld 159	39	5,000 ✓	Diesel
D.	7 Bld 159	39	5,000 ✓	↓

2. Directions to Facility (be specific): [illegible]

3. Is tank(s) used for the storage of Class I liquids (e.g. gasoline, jet fuel)? Yes___ No ✓ (IF YES, REMOVAL OF THE TANK MUST BE UNDER THE DIRECTION OF A CERTIFIED TANK INSTALLER OR PROFESSIONAL FIREFIGHTER.)

4. Name and telephone number of contractor who will do the tank removal: Pollution Control Services 207-854-4044

Certified Tank Installer Certification Number & Name (if applicable): Paul Fecteau #270

Professional Firefighter Yes___ No ✓ (Affiliation:__________)

5. Expected date of removal: 11/12

I hereby provide Notice that I intend to properly abandon the underground oil storage facility as described above.

Date: 10/9/91

Nancy S. Anderson
Signature of Tank Owner or Operator

Nancy S. Anderson Admin. Asst. / Buyer
Printed Name and Title

THIS FORM MUST BE FILED WITH THE DEPARTMENT AND LOCAL FIRE DEPARTMENT 30 DAYS PRIOR TO REMOVAL - RETURN POSTCARD WHEN TANK(S) HAS BEEN REMOVED.

Mail original and yellow copy to DEP; pink copy to fire dept.; retain gold copy

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Page 2 of 2
Tanks out vis by SG ..677-91

Maine Department of Environmental Protection
Bureau of Oil & Hazardous Materials Control
State House Station #17, Augusta, Maine 04333
Telephone: 207-289-2651
Attn: Tank Removal Notice

NOTICE OF INTENT
TO ABANDON (REMOVE) AN
UNDERGROUND OIL STORAGE FACILITY

Name of Facility Owner: Defense Fuel Supply Center
Mailing Address: P.O. Box 148 Telephone No: 207-833-6232
City: Harpswell State: ME. Zip Code: 04079
Contact Person (name, address & telephone no.): Nancy Anderson P.O. Box 148 Harpswell, ME 207-833-6232
Name of Facility: Def. Fuel Sp. Ctr. Casco Bay Registration No.: 6452
Facility Location: Route 123 Harpswell, ME

1. Identify the tanks at this location which are to be removed:

	Tank Number	Age of Tank (Years)	Tank Size (Gallons)	Type of Product Most Recently Stored
	3 Behind Bldg 173	6	10,000 ✓	FS.
A.	8 Bld 152	39	1,000	WASTE/USED OIL
B.	9 Bldg 174	39	~~1,000~~ 500	
C.	~~10~~	~~39~~	~~1,000~~	
D.	11 Bld 173	39	~~1,000~~ 500 ✓	↓
	12 by office	6	4,000 ✓ ok	~~Truck Racks~~

2. Directions to Facility (be specific):

3. Is tank(s) used for the storage of Class I liquids (e.g. gasoline, jet fuel)? Yes___ No ✓ (IF YES, REMOVAL OF THE TANK MUST BE UNDER THE DIRECTION OF A CERTIFIED TANK INSTALLER OR PROFESSIONAL FIREFIGHTER.)

4. Name and telephone number of contractor who will do the tank removal: Pollution Control Services 207-854-4044

Certified Tank Installer Certification Number & Name (if applicable): Paul Fecteau #270

Professional Firefighter Yes___ No ✓ (Affiliation:__________)

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Nancy S. Anderson
Signature of Tank Owner or Operator

Nancy S. Anderson Admin. Asst. / Buyer
Printed Name and Title

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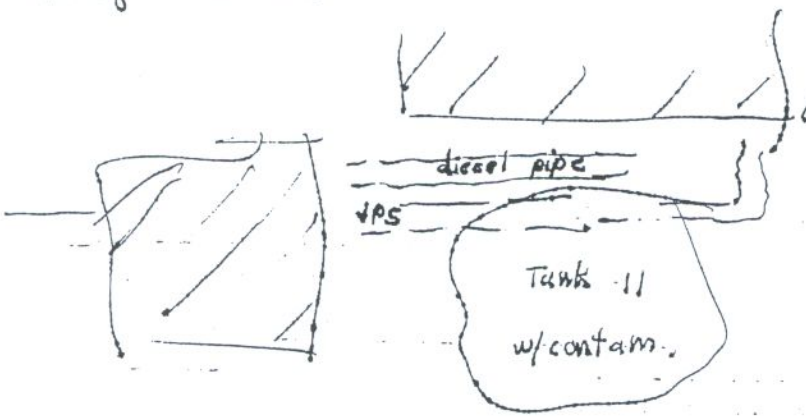
Mail original and yellow copy to DEP; pink copy to fire dept.; retain gold copy

Harry Grinder, Marc Guiver
Doug Gleason.

11/19/91

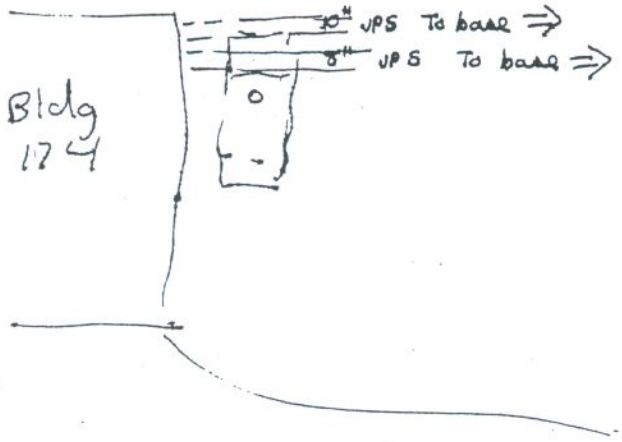


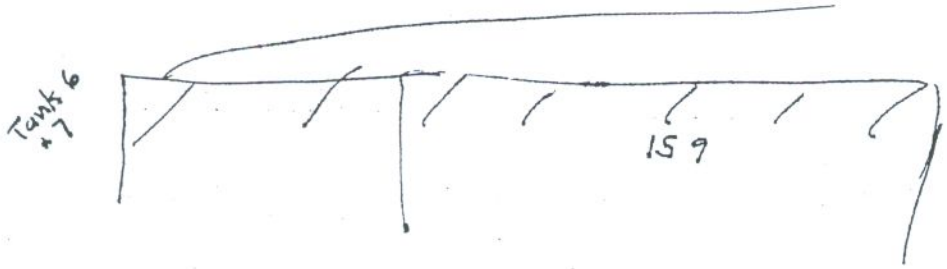
Tank 11 buried 7' deep, same prod. spilled w/ removal

Tank 4, some contam

By Bldg 174, Tank 2 Free product in hole with excavation old male/female pipe. Slope tanks w/ corrosion holes

from pumping out tank





Maine Drilling Control, Inc. Portland, Regional Office.
21 Vocational Dr., So. Portland, ME 04106 (207) 767-4761

Attachment A

LAND SPREADING AGREEMENT FORM

S. Brezinski 11/20/91
S. G. Brezinski has inspected the proposed land spreading
(Name of Inspector)

site at DFSP Casco Bay, Rt 123 (P-677-91)
(Location of Site)

in the Town of Harpswell, Maine.
(Name of Town)

The site named above has been found satisfactory for land spreading in accordance with Department Land Spreading Guidelines (attached). Limitations to this agreement are listed below. :

a) Quantity estimated at 130 (one hundred thirty) cubic yards of petroleum (JP-5, #2 oil) contaminated soil (PCS) from removal of UST's 4, 9 and 11.

b) All soil may be Landfarmed onsite in lower tank farm, berm for Tank 5.

d) Soil shall be spread 2 to 4 inches thick, fertilized with garden fertilizer (i.e 20-10-10) at 1/2 lb./yd^3 in Nov. 1991; and again on or about May 1, 1992, with tilling to promote aeration

e) This PCS shall not be disturbed or removed without prior DEP notification and approval.

I, Harry W. Grinder of DFSP Casco Bay / Contractor Co.
(Company Representative) (Company Name)
agree to abide by the attached guidelines and limitations outlined above in spreading oil contaminated soil on the site identified above. I further agree to abide by all Local, State and Federal codes, regulations, and laws. The site will be open to inspection by DEP personnel for the duration of the Land Treatment process. I further acknowledge that my company bears the full responsibility for all operations on and at this site and that my company will notify the town of our operation by sending them the PINK copy of this Agreement Form within seven (7) days.

Harry W. Grinder 11/20/1991
Company Representative Date signed

White - Company Rep. Canary - DEP Rep. Pink - Town

DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATE HOUSE STATION #17, AUGUSTA, MAINE 04333 GENERAL INFO 289-7688

TO: Defense Fuel Supply Ctr/Casco Bay Harpswell, ME
For Continental Services Inc. and DFSP, Alexandria VA.

PRESENTED TO: H. Grinder

DATE: 20 November 1991.

MESSAGE: DFSP, Harpswell shall proceed with clean-up of petroleum contaminated soil associated with removal of UST's, Nov. 1991.

a) All contaminated soil shall be cleaned-up as per landspreading Agreement at w/site.

b) Area around Tank no. 9 which showed free phase product with removal shall be excavated from the tank area back to the building and managed as contaminated. Groundwater present shall be pumped down/out after free phase has been removed. A 24" to 36" diameter recovery well surrounded by Pea stone shall be installed prior to filling in the excavation. This well shall visualy shall be checked weekly for evidence of free product untill Jan. 1, 1992 and each time fuel is pumpled.

d) It is recommended that several monitoring wells be installed in this area to check for and delineate further evidence of contamination.

e) No further action is required for Tank (UST) area 4 and 11 at present though further investigation may be warranted in the future.

BY: Andrew Bridgewater w/site

Attachment B

Air Quality Control 289-2437 | Oil & Haz. Mat. Control 289-2651 | Land Quality Control 289-2111 | Water Quality Control 289-3355 or 289-3901

SPECIFICATION TO REMOVE UNDERGROUND TANKS
DFSP CASCO BAY, MAINE

1.0 SCOPE: The work involves the removal of the following underground tanks located at DFSP Casco Bay, Maine:

TANK NO.	TANK SIZE (GALS)	PRODUCT STORED	LOCATION	REMOVAL PRIORITY
3	10,000	FSII	Bldg 173	8
4	1,000	Slop Fuel	Bldg 172	1
5	10,000	Slop Fuel	Truck Rack	7
6	5,000	Diesel	Bldg 159	2
7	5,000	Diesel	Bldg ~~169~~ 159	3
8	1,000	Fuel Oil #2	Bldg ~~170~~ 159	4
9	1,000	Slop Fuel	Bldg 174	5
11	1,000	Slop Fuel	Bldg 173	6
12	4,000	Slop Fuel	Bldg 129	9

2.0 APPLICABLE PUBLICATIONS: The publications listed below form a part of the specification to the extent referenced. Publications are referred to in the text by the basic designation only.

2.1 American society of testing and materials (ASTM) D1557-78, Moisture Density Relations of Soils and Soil Aggregate Mixtures Using 10-Lb Rammer and 18-Inch Drop.

2.3 State of Maine: P.L. 1985, Chap. 496, 38 MRSA Section 566 (State of Maine Public Law) - Abandonment of Underground Storage Facilities and Tanks.

3.0 ENVIRONMENTAL PROTECTION: All work shall conform to State of Maine public law provisions, regulations of the State of Maine Department of Environmental Protection (DEP) (chapter 691), and applicable federal and local regulations. The contractor shall be licensed by the state for the removal of underground tanks. Upon extraction of the tanks, the contractor shall assess the site for petroleum contamination by visual examination and soil vapor analysis. If contaminated soil is present, the contractor shall immediately inform the DEP (1-800-482-0777) and the terminal superintendent for guidance. If the groundwater table is up to the level of the tank bottom, then a groundwater sample shall be taken and analyzed employing EPA test method 624 for dissolved volatile organic hydrocarbons. If such hydrocarbons are present, the contractor shall immediately inform the DEP and the terminal superintendent for guidance. Contaminated soil will be landfarmed on DFSP Casco Bay by others. Special measures, including those approved by the DEP, shall be taken as necessary to prevent oily or other hazardous substances from entering the ground, drainage areas, and local bodies of water.

3.1 NOTIFICATION: The contractor performing this work shall provide written notification at a minimum of 30 days in advance of the projected start of work by registered mail to the State of Maine DEP and the local fire department utilizing forms provided by the DEP for this purpose. A copy of the written notification shall be furnished to the terminal superintendent. The contractor shall similarly notify the DEP upon tank removal.

4.0 EXCAVATION: Excavate to the contours and dimensions necessary to permit removal of the storage tank. Shoring and sheeting shall be provided as necessary to protect personnel, adjacent structures, and utilities. Excavated material shall be stockpiled on site for re-use as backfill. Any contaminated soil shall be stockpiled on site on polyethylene sheeting for handling by others. Location of the stockpile site shall be as directed by the terminal superintendent.

4.1 BACKFILL: Backfill excavations to the level of surrounding undisturbed areas. Grade to drain water away from structures and to prevent ponding. Backfill material shall consist of the stockpiled excavated material and borrow material obtained by the contractor from sources off government property. No soft, spongy, highly plastic, or otherwise unstable material shall be used as backfill. Backfill shall be unclassified but shall contain sufficient fines to ensure proper compaction. Material shall be free of organic matter and shall contain no stones larger than four inches in any one dimension.

4.2 COMPACTION: Place backfill in 12-inch lifts and compact using hand-operated plate-type vibrator or other suitable tampers. Compact each lift so that the in place density is not less than 95% of the maximum ASTM D1557 density under paved areas and 90% under grassed areas. Do not backfill in freezing weather, or with frozen or muddy material. Remove standing water from excavations prior to backfilling.

4.3 SITE RESTORATION OF GRASS AREAS: Obtain and spread topsoil to a uniform depth of four inches over disturbed areas. Rake to remove debris and stones larger than one inch in any dimension, to provide proper drainage, and eliminate any depressions. Sow grass seed uniformly at a rate of one pound per 150 square feet. Grass seed mixture shall consist of 55% Kentucky Bluegrass, 30% Red Fescue, and 15% Perennial Rye Grass by weight. After sowing, cover seed to an average 1/2' depth. Protect seeded areas with suitable mulch.

5.0 REMOVALS: Existing equipment and materials which are to remain in place shall be protected by the contractor. All piping shall be drained and flushed into the tank or another suitable container such that no waste water or product is released to the environment. Any material remaining in the tank shall be removed and disposed of by the contractor prior to excavation. If the material is hazardous waste, the contractor shall manifest it through a licensed hazardous waste transporter and dispose of it according to 38 MRSA, Sections 543 and 568 (1). Also, any liquids from the tank which cannot be used for their originally intended purpose shall be disposed of by the contractor according to the DEP waste oil management rules (chapter 860). The

fill (drop) tube shall be removed. Fill, gauge, and product lines shall be disconnected to the extent necessary to permit tank removal. The open ends of all lines shall be capped or plugged. All tank openings which will not be used in the inerting procedure shall also be plugged. Only the vent line will remain connected and open until the inerting procedure is complete. Where such lines penetrate building walls, cap the lines within 12 inches of the exterior face of the building wall.

5.1 DISPOSITION OF MATERIAL: All material and equipment removed and not scheduled for reuse shall become the property of the contractor and shall be removed from government property. Title to material and equipment to be removed is vested in the contractor upon the start of work. Disposal of material and equipment shall be performed in full compliance with applicable federal, state, and local regulations.

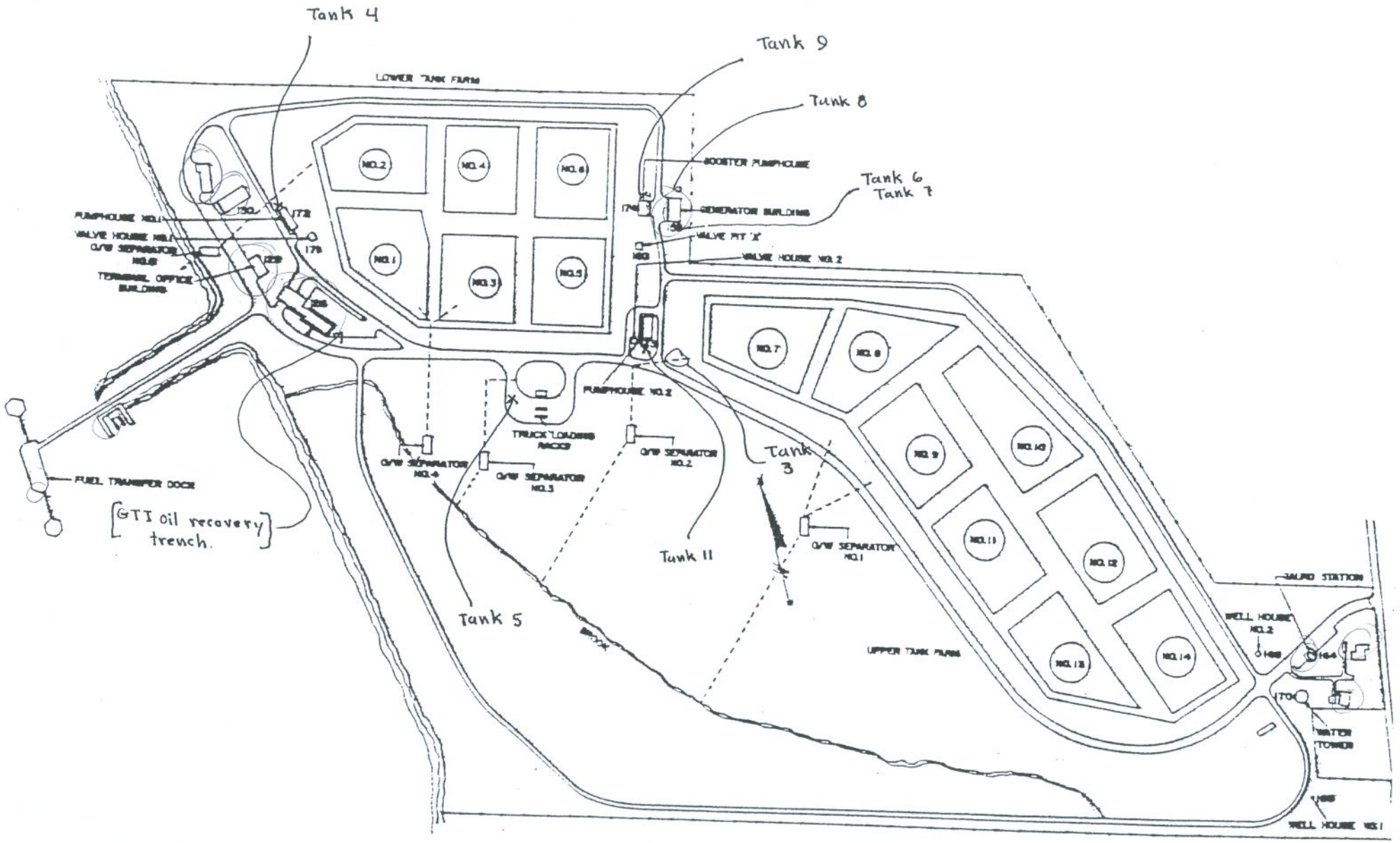


Figure DFSP CASCO BAY, FACILITY LAYOUT

MEDEP Tank Files

Date of Certificate:

JULY 12, 1990

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

UNDERGROUND STORAGE TANK FACILITY REGISTRATION FORM

Please display this certificate in a visible location at the registered facility.

Facility:

DEF. FUEL SER. CTR. CASCO BAY
ROUTE 123
HARPSWELL
ME 04074

Facility Registration Number: 16914

Date of Registration: JULY 10, 1990

Operator: CONTINENTAL ~~TENCO~~ SERVICES, INC.
P.O. BOX 148
SOUTH HARPSWELL
ME 04079

Sensitive Area Status:

NONE

Owner:

DEFENSE FUEL SUPPLY CENTER
CAMERON STATION
ALEXANDRIA
VA 22304

Facility Use:

CHEMICAL STORAGE

Number of Tanks: 1
(See accompanying list for detailed breakdown)

IF THE INFORMATION ON THIS FORM IS ACCURATE AND COMPLETE, PLEASE RETAIN FOR YOUR RECORDS.

The Maine Department of Environmental Protection must be notified of any errors or changes in the information on this form. To accomplish this, please draw a line through the incorrect or outdated information, insert the correct information, and return this form to:

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF OIL AND HAZARDOUS MATERIALS CONTROL
STATE HOUSE STATION #17
AUGUSTA, MAINE 04333
ATTN: Underground Tanks Program

If you have any questions concerning this process, please call (207)289-2651 and ask for the administrator of the Underground Storage Tanks program.

#16914
ALSO
#6452

DEFENSE LOGISTICS AGENCY
DEFENSE FUEL SUPPLY CENTER
CAMERON STATION
ALEXANDRIA, VIRGINIA 22304-6160

IN REPLY
REFER TO DFSC-FQ

08 Aug 1991

SUBJECT: Underground Chemical Storage Facility - Annual Registration Fee, Defense Fuel Support Point Casco Bay, Registration No. 16914

State Of Maine
Department of Environmental Protection
Bureau of Oil and Hazardous Materials Control
State House Station #17
Augusta, Maine 04333

Gentlemen:

The Defense Fuel Support Point (DFSP) Casco Bay closed for business in December 1991. All regulated underground storage tanks (USTs) were removed under Task Order ACO-0051 dated 29 July 1991 (enclosed). The USTs were actually removed from the ground in December 1991, although final acceptance of the work was not conferred until March 1992.

Please update your records to reflect the permanent removal of USTs associated with Registration Number 16914. If you need further assistance, please contact Mr. Thomas Riffe at telephone (703) 274-1507.

Sincerely,

Encl

EDWARD T. PINION
CAPT, SC, USN
Director, Facilities
Management

#6452 Records
Have all tanks
Removed

DEPARTMENT OF ENVIRONMENTAL PROTECTION

REGISTRATION FORM FOR UNDERGROUND OIL AND HAZARDOUS SUBSTANCES (CHEMICAL) STORAGE TANKS

(PURSUANT TO 38 M.R.S.A. SECTION 563, 40 CFR PART 280)

FACILITY NAME: DESP CASCO BAY

LOCATION (TOWN/CITY): SOUTH HARPSWELL, ME OWNER: DEPARTMENT OF DEFENSE

REGISTRATION NUMBER

(COMPLETE ONLY IF REGISTRATION NUMBER WAS ASSIGNED.)

10. IF NEW OR REPLACEMENT TANKS ARE INCLUDED WITH THIS REGISTRATION, PROVIDE:

A. NAME OF INSTALLER: N/A

B. INSTALLER ID NUMBER: N/A C. EXPECTED DATE OF INSTALLATION: N/A

11. INDIVIDUAL TANK DATA (COMPLETE ONE [1] LINE FOR EACH TANK AT THE FACILITY, INCLUDING TANKS PLANNED FOR INSTALLATION OR REPLACEMENT).

A. TANK NUMBER	B. TANK TYPE	C. PIPING TYPE	D. TANK SIZE	E. FORM OF ADDITIONAL PROTECTION FOR NEW AND REPLACEMENT WHOLESALE OR RETAIL TANKS IN SENSITIVE GEOLOGIC AREAS (TANKS AND PIPING)	F. PRODUCT STORED	G. DATE INSTALLED	H. STATUS	I. DATE REMOVED FROM ACTIVE SERVICE (IF APPLICABLE)	J. AMOUNT OF PRODUCT LEFT IN INACTIVE TANK (IF APPLICABLE)
1	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED __ DIESEL FUEL OIL: X #1 X #2 __ #4 __ #5 __ #6 CHEMICAL (SPECIFY) OTHER (SPECIFY)	9,152 (MO) (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) X PLANNED FOR REMOVAL	(MO) 1 (YR)	GALLONS
2	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED __ DIESEL FUEL OIL: X #1 __ #2 __ #4 __ #5 __ #6 CHEMICAL (SPECIFY) OTHER (SPECIFY)	9,152 (MO) (YR)	__ PLANNED __ ACTIVE X OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) X PLANNED FOR REMOVAL	(MO) 1 (YR)	GALLONS
3	__ BARE OR ASPHALT-COATED STEEL X CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	10000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED __ DIESEL FUEL OIL: __ #1 __ #2 __ #4 __ #5 __ #6 CHEMICAL (SPECIFY) FSII OTHER (SPECIFY)	6,185 (MO) (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	(MO) 1 (YR)	GALLONS
4	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED __ DIESEL FUEL OIL: __ #1 __ #2 __ #4 __ #5 __ #6 CHEMICAL (SPECIFY) X OTHER (SPECIFY) 560 FUEL	9,152 (MO) (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	(MO) 1 (YR)	GALLONS
5	__ BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL X FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	10,000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED __ DIESEL FUEL OIL: __ #1 __ #2 __ #4 __ #5 __ #6 CHEMICAL (SPECIFY) X OTHER (SPECIFY) 560 FUEL	9,182 (MO) (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	(MO) 1 (YR)	GALLONS

DEPARTMENT OF ENVIRONMENTAL PROTECTION

REGISTRATION FORM FOR UNDERGROUND OIL AND HAZARDOUS SUBSTANCES (CHEMICAL) STORAGE TANKS

(PURSUANT TO 38 M.R.S.A. SECTION 563, 40 CFR PART 280)

FACILITY NAME: DFSP CASCO BAY (Cont.)

LOCATION (TOWN/CITY): _____ OWNER: _____

REGISTRATION NUMBER _____ (COMPLETE ONLY IF REGISTRATION NUMBER WAS ASSIGNED.)

10. IF NEW OR REPLACEMENT TANKS ARE INCLUDED WITH THIS REGISTRATION, PROVIDE:

A. NAME OF INSTALLER: _____

B. INSTALLER ID NUMBER: _____ C. EXPECTED DATE OF INSTALLATION: _____

11. INDIVIDUAL TANK DATA (COMPLETE ONE [L] LINE FOR EACH TANK AT THE FACILITY, INCLUDING TANKS PLANNED FOR INSTALLATION OR REPLACEMENT).

A. TANK NUMBER	B. TANK TYPE	C. PIPING TYPE	D. TANK SIZE	E. FORM OF ADDITIONAL PROTECTION FOR NEW AND REPLACEMENT WHOLESALE OR RETAIL TANKS IN SENSITIVE GEOLOGIC AREAS (TANKS AND PIPING)	F. PRODUCT STORED	G. DATE INSTALLED	H. STATUS	I. DATE REMOVED FROM ACTIVE SERVICE (IF APPLICABLE)	J. AMOUNT OF PRODUCT LEFT IN INACTIVE TANK (IF APPLICABLE)
6	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	5000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED; FUEL OIL: __ #1 __ #2 __ #4 __ #5 __ #6; X DIESEL; __ CHEMICAL (SPECIFY) _____; __ OTHER (SPECIFY) _____	9 (MO) 52 (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	/ (MO) / (YR)	GALLONS
7	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	5000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED; FUEL OIL: __ #1 __ #2 __ #4 __ #5 __ #6; X DIESEL; __ CHEMICAL (SPECIFY) _____; __ OTHER (SPECIFY) _____	9 (MO) 52 (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	/ (MO) / (YR)	GALLONS
8	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED __ DIESEL; FUEL OIL: X #2 __ #1 __ #4 __ #5 __ #6; __ CHEMICAL (SPECIFY) _____; __ OTHER (SPECIFY) _____	9 (MO) 52 (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	/ (MO) / (YR)	GALLONS
9	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: __ REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED __ DIESEL; FUEL OIL: __ #1 __ #2 __ #4 __ #5 __ #6; __ CHEMICAL (SPECIFY) _____; X OTHER (SPECIFY) JET FUEL	9 (MO) 52 (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	/ (MO) / (YR)	GALLONS
10	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE: X REGULAR __ PREMIUM __ UNLEADED __ PREMIUM UNLEADED __ DIESEL; FUEL OIL: __ #1 __ #2 __ #4 __ #5 __ #6; __ CHEMICAL (SPECIFY) _____; __ OTHER (SPECIFY) _____	6 (MO) 82 (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	/ (MO) / (YR)	GALLONS

DEPARTMENT OF ENVIRONMENTAL PROTECTION

REGISTRATION FORM FOR UNDERGROUND OIL AND HAZARDOUS SUBSTANCES (CHEMICAL) STORAGE TANKS

(PURSUANT TO 38 M.R.S.A. SECTION 563, 40 CFR PART 280)

FACILITY NAME: DFSC CASCO BAY (CONT.)

LOCATION (TOWN/CITY): _____ OWNER: _____

REGISTRATION NUMBER

(COMPLETE ONLY IF REGISTRATION NUMBER WAS ASSIGNED.)

10. IF NEW OR REPLACEMENT TANKS ARE INCLUDED WITH THIS REGISTRATION, PROVIDE:

A. NAME OF INSTALLER: _____

B. INSTALLER ID NUMBER: _____ C. EXPECTED DATE OF INSTALLATION: _____

11. INDIVIDUAL TANK DATA (COMPLETE ONE [L] LINE FOR EACH TANK AT THE FACILITY, INCLUDING TANKS PLANNED FOR INSTALLATION OR REPLACEMENT).

ANK UMBER	B. TANK TYPE	C. PIPING TYPE	D. TANK SIZE	E. FORM OF ADDITIONAL PROTECTION FOR NEW AND REPLACEMENT WHOLESALE OR RETAIL TANKS IN SENSITIVE GEOLOGIC AREAS (TANKS AND PIPING)	F. PRODUCT STORED	G. DATE INSTALLED	H. STATUS	I. DATE REMOVED FROM ACTIVE SERVICE (IF APPLICABLE)	J. AMOUNT OF PRODUC LEFT IN INACTIVE TANK (IF APPLICABLE)
1	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE FUEL OIL __ REGULAR __ #1 __ #5 __ PREMIUM __ #2 __ #6 __ UNLEADED __ #4 __ PREMIUM UNLEADED __ DIESEL __ CHEMICAL (SPECIFY) X OTHER (SPECIFY) SLOP FUEL	9 (MO) 52 (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	/ (MO) / (YR)	GALLONS
2	__ BARE OR ASPHALT-COATED STEEL X CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	4000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE FUEL OIL __ REGULAR __ #1 __ #5 __ PREMIUM __ #2 __ #6 __ UNLEADED __ #4 __ PREMIUM UNLEADED __ DIESEL __ CHEMICAL (SPECIFY) X OTHER (SPECIFY) SLOP FUEL	7 (MO) 85 (YR)	X PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	/ (MO) / (YR)	GALLONS
3	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE FUEL OIL __ REGULAR __ #1 __ #5 __ PREMIUM X #2 __ #6 __ UNLEADED __ #4 __ PREMIUM UNLEADED __ DIESEL __ CHEMICAL (SPECIFY) __ OTHER (SPECIFY)	9 (MO) 52 (YR)	__ PLANNED __ ACTIVE X OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) X PLANNED FOR REMOVAL	/ (MO) / (YR)	EMPTY GALLONS
4	X BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	X GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	1000 GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE FUEL OIL __ REGULAR __ #1 __ #5 __ PREMIUM X #2 __ #6 __ UNLEADED __ #4 __ PREMIUM UNLEADED __ DIESEL __ CHEMICAL (SPECIFY) __ OTHER (SPECIFY)	9 (MO) 52 (YR)	__ PLANNED __ ACTIVE X OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) X PLANNED FOR REMOVAL	/ (MO) / (YR)	EMPTY GALLONS
	__ BARE OR ASPHALT-COATED STEEL __ CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	__ GALVANIZED STEEL CATHODICALLY PROTECTED STEEL __ FIBERGLASS __ OTHER (SPECIFY)	GALLONS	__ CONTINUOUS ELECTRONIC MONITORING OF GROUND WATER __ CONTINUOUS ELECTRONIC MONITORING OF VAPORS __ SECONDARY CONTAINMENT __ GROUND WATER SAMPLING	GASOLINE FUEL OIL __ REGULAR __ #1 __ #5 __ PREMIUM __ #2 __ #6 __ UNLEADED __ #4 __ PREMIUM UNLEADED __ DIESEL __ CHEMICAL (SPECIFY) __ OTHER (SPECIFY)	/ (MO) / (YR)	__ PLANNED __ ACTIVE __ OUT-OF-SERVICE __ ABANDONED IN IN PLACE (FILLED WITH INERT MATERIAL) __ PLANNED FOR REMOVAL	/ (MO) / (YR)	GALLONS

Facility Reg. No.: 10457 Location: S. Harpswell

Facility Name: Defense Fuel Supply Center

This is to notify you that on 4-24-90.
the following underground oil storage tanks were removed by
(contractor): Clean Harbors.

	Tank Size	Product Stored
1.	1,000	gasoline
2.		
3.		
4.		

[signature] agent of owner 5-21-90
Authorized Signature Date

CH I.

Facility Name: Defense Fuel Supply Center

This is to notify you that on 11/12 - 11/18/91 the following underground oil storage tanks were removed by
(contractor): Pollution Control Services.

		Tank Size	Product Stored
1.	3	10,000 Reg# 16914	FS II
2.	4	1,000	Waste Oil / Slop Tank
3.	5	10,000	Waste Oil / Slop Tank
4.	6	5,000	Diesel
7.		5,000	Diesel

Authorized Signature 11/27/91 Date

RE: Defense Fuel Supply Center Assessment Report
DEP Facility Registration No. 6452; Tank Nos. 6 and 7

Gentlemen:

Enclosed please find one (1) copy of the Defense Fuel Supply Center UST Site Assessment Report (DEP Facility Registration 6452), prepared for the Defense Fuel Supply Center; Harpswell, Maine. This assessment was performed in compliance with 38 M.S.R.A., Section 561 and the State of Maine D.E.P. Regulations of Chapter 691, Appendix P (September 16, 1991).

As stated in the report the scope of work performed in completing this assessment consisted of an on-site field inspection, records research with local and state agencies, field testing with appropriate scientific apparatus and laboratory analysis of controlled custody soil samples taken at the site of two (2) 5,000 gallon UST (No. 6 & 7) near Bld. #159. All tasks were performed by Pollution Control Services (PCS) personnel.

On-site inspection, P.I.D. screening and laboratory sample testing performed by PCS indicate no soil contamination was present in the immediate vicinity of the fuel oil storage tank removal site. Based on the findings of the PCS report and analytical testing documented by Maine Environmental Laboratories it is my opinion that no further action need be taken in conjunction with the closure of these tanks.

Should you have any questions or comments concerning these tank closures please don't hesitate to contact PCS or the undersigned.

Very truly yours,

John A. Higgins

John A. Higgins, P.E.

STATE OF MAINE
JOHN A. HIGGINS
No. 6240
REGISTERED PROFESSIONAL ENGINEER

NOTICE OF UNDERGROUND OIL STORAGE TANK REMOVAL
(File with DEP and local fire department 10 days in advance)

1. REGISTRATION NUMBER: 6452
(Complete only if a registration number has been previously assigned by DEP)

2. FACILITY INFORMATION
   a. Facility Name: DEFENSE FUEL SUPPORT POINT - CASCO BAY
   b. Facility Mailing Address: P.O. BOX 148, SO. HARPSWELL, ME 04079
   c. Telephone Number: (207) 833-6232

3. TANK OWNER INFORMATION
   a. Name: U.S. NAVY
   b. Mailing Address: P.O. BOX 97, U.S. NAVAL AIR STATION
   c. Town/City: JACKSONVILLE State: FL Zip: 32212-0097
   d. Telephone Number: (904) 757-5354

4. CONTRACTOR:
   a. Name: TENCO Services, Inc.
   b. Telephone Number: (207) 833-6232

5. EXPECTED REMOVAL DATE: 6 / 9 / 87

6. TANK INFORMATION:

Tank No.	Approximate Age (Years)	Tank size (Gallons)	Type Product Most Recently Stored
1	30	1,000	Heating Oil
2.	30	1,000	Heating Oil
3.	30	1,000	Heating Oil
	30	1,000	Heating Oil

7. DIRECTIONS TO FACILITY (Please be specific): Rte. 123 South from Bowdoin College - 11 miles on right.

8. SIGNATURE OF FACILITY OWNER OR REPRESENTATIVE:
Richard L. Disney Lt. Date: 5/28/87

RETURN COMPLETED FORM TO:

Maine Dept. of Environmental Protection
Bureau of Oil & Hazardous Materials Control
State House Station 17
Augusta, ME 04333
Attn: Tank Removal Notice

OIL/109/4/87

Facility Reg. No.: 6452 Location: Hampswell

Facility Name: Defense Fuel Supply Center

This is to notify you that on 11/12 - 11/18/91, the following underground oil storage tanks were removed by
(contractor): Pollution Control Services.

		Tank Size		Product Stored
1.	3	10,000	Reg# 16914	FS II
2.	4	1,000		WasteOil/SlopeTank
3.	5	10,000		WasteOil/SlopeTank
4.	6	5,000		Diesel
7.		5,000		Diesel

Authorized Signature 11/27/91 Date

Facility Reg. No.: 6452 Location: Hampswell

Facility Name: Defense Fuel Supply Center

This is to notify you that on 11/12 - 11/19/91, the following underground oil storage tanks were removed by
(contractor): Pollution Control Services.

	Tank Size	Product Stored
1. 8	1,000	WasteOil/SlopTank
2. 9	1,000	" "
3. 11	1,000	" "
4. 12	4,000	" "

Authorized Signature 11/27/91 Date

ASSESSMENT REPORT
UNDERGROUND STORAGE TANK CLOSURE
DEFENSE FUEL SERVICE CENTER CASCO BAY, HARPSWELL, MAINE

PREPARED FOR:

DEFENSE FUEL SUPPLY CENTER
ROUTE #123, BOX 148
HARPSWELL, MAINE 04079

PREPARED BY:

POLLUTION CONTROL SERVICES
637 MAIN STREET
GORHAM, MAINE 04038

NOVEMBER 1991

ASSESSMENT REPORT SUMMARY
UNDERGROUND STORAGE TANK CLOSURE
DEFENSE FUEL SUPPORT POINT CASCO BAY, HARPSWELL, MAINE

FACILITY OWNER :	Defense Fuel Supply Center Cameron Station Alexandria, VA
FACILITY OPERATOR :	Continental Services, Inc. P.O. Box 148 Harpswell, ME
FACILITY NAME :	Defense Fuel Support Point Route 123 Harpswell, ME
DEP FACILITY REG.# :	6452 Tank# 6, Tank# 7
DATE OF ASSESSMENT :	November 13, 1991
EVIDENCE OF LEAKS OR DISCHARGES :	N/A

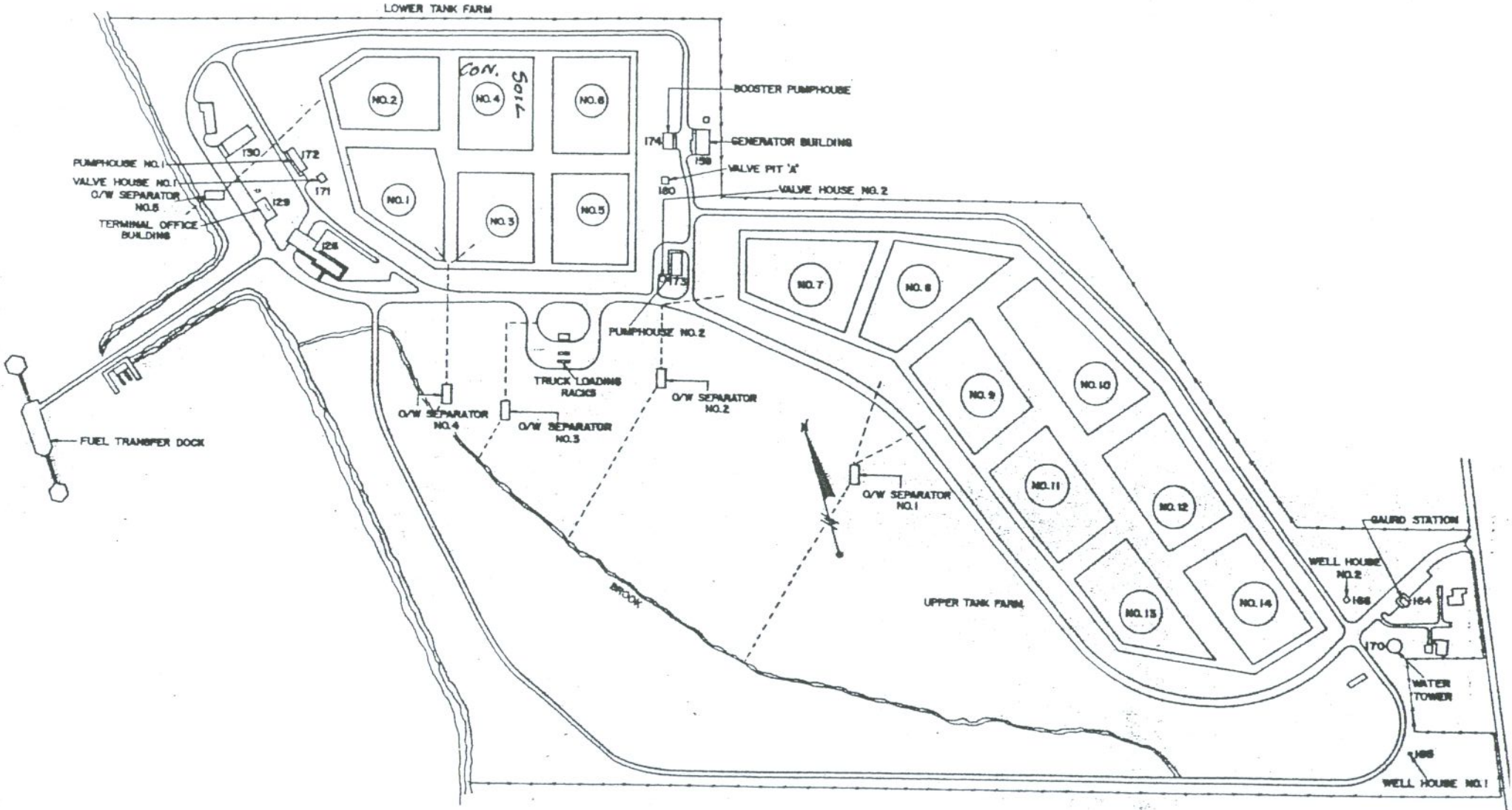


Figure DFSP CASCO BAY, FACILITY LAYOUT

INTRODUCTION

This Underground Storage Tank (UST) Closure Assessment of the Defense Fuel Support Point Casco Bay (DFSCCB) located on Route# 123 in Harpswell, Maine was conducted by Pollution Control Services (PCS) in compliance with 38 M.R.S.A. Section 561 and Maine Department of Environmental Protection's (DEP's) "Regulations for Registration, Installation, Operation, and Closure of Underground Oil Storage Facilities". The purpose of this assessment was to determine if there was any evidence of a product discharge from two 5,000 gal. underground diesel fuel storage tanks, or the piping and other components associated with these tanks present at the time they were removed.

The scope of work included; an inspection of the site, field sampling and laboratory analysis of soil samples taken from the bottom of the closure excavation. This assessment is subject to the limitations outlined in the "Limitations" section of this report.

SITE DESCRIPTION

This facility is owned by Defense Fuel Supply Center of Alexandria, Virginia and consists of a single lot identified on the Harpswell Tax Assessors Map# U-13 as Lot # 16.

The subject property is located on Middle Bay, covering +/- 117 acres on the western side of Route# 123 in Harpswell, Maine. The site is abutted by private residential lots and the South Neck Fire Department.

The facility is surrounded by a chain link security fence with a gate and guard house. Vehicle access to the subject property is obtained via this gated entrance from Route# 123.

The entire site is occupied by a DEP licensed Marine Oil Terminal. The terminal consists primarily of a concrete product transfer dock, 14 above ground storage tanks (8-80,000 Bbl.& 6-50,000 Bbl.), which store JP-5 fuel for the BrunswicK Naval Air Station and several buildings which are used for maintenance, storage and tank farm operations. (See Figure 1) There are 15 registered underground storage tanks also located at the terminal. These underground tanks are used to store fuel oil, diesel fuel, and waste oils from tank farm separators. All of these tanks have either been removed or are scheduled for removal as part of a total facility closure planned for 1992.

This tank closure assessment was performed as a requirement for the removal of the two diesel fuel tanks which were

located in the Lower tank Farm, adjacent to the Generator Building (Building# 159). (See Figure 2)

SITE HISTORY

Much of the site's history was drawn from conversations with Tank Farm administrator's Harry Grinder and Nancy Anderson.

Tank Farm construction was completed in November of 1954 on property procured by the Navy, which had formerly housed private seasonal homes.

The site has operated as an Oil Terminal Facility since it's construction.

SITE INVESTIGATION

On November, 12, 1991 a representative of PCS visited DFSCCB. to oversee tank removal operations and inspect the area adjacent to the two 5,000 gal. underground diesel tanks for evidence of product discharge.

A thorough visual inspection of areas adjacent to the tanks, piping and associated equipment was performed which included the following:

1) the grassy area and corners of Building# 159 adjacent to the 2 - 2" Vent pipes

2) the concrete manway sumps in which the suction and return line connections and fill pipes were located

3) the asphalt parking area and roadway bordering the tank areas

4) the soil on the sides and bottom of the excavation from which both tanks were removed

In addition to a visual inspection of the excavation, field screening operations were performed on the sides and bottom of the excavation with a calibrated PID meter (Data Logger Model 580B Unit OVM TE 09). No readings above background were found anywere in the excavation.

The removed tanks and piping were cleaned and closely examined for holes or stains, none were found.

SAMPLING METHODOLOGY

Duplicate composite soil samples were taken from the bottom of the excavation at 2' grid intervals with a clean stainless steel spatula and placed in zip-lock-type polyethylene sample

bags. Both composite samples were labled and stored in a field cooler. One sample was transfered to a 1 liter glass sample jar with teflon lined cap and transported with chain of custody documentation to Maine Environmental Laboratories for TPH diesel fuel analysis (DEP Standard Operating Procedure, Number 4.1.2, Revision 1, June 24,1991). and the other was stored in the Pollution Control Sample Refrigerator pending sample analysis.

INVESTIGATION RESULTS

SAMPLE RESULTS

Laboratory analysis failed to indicate the presense of product contamination in the soil located below the two diesel tanks. Sample results are included as Appendix# 1 of this report.

PID SCREENING

Field screening operations were performed with a PID meter in compliance with methods outlined in "Appendix P" of DEP "Regulations for Registration, Installation, Operation, and Closure of Underground Oil Storage Facilities". No readings were recorded above background standards.

LIMITATIONS

This tank closure site assessment was performed to evaluate DFSCCB Facility with respect to the scope of work outlined in the "Introduction" section of this report. The conclusions and recommendations presented in this report were based solely upon services described herein, not on scientific task or procedure beyond the scope of services described herein.

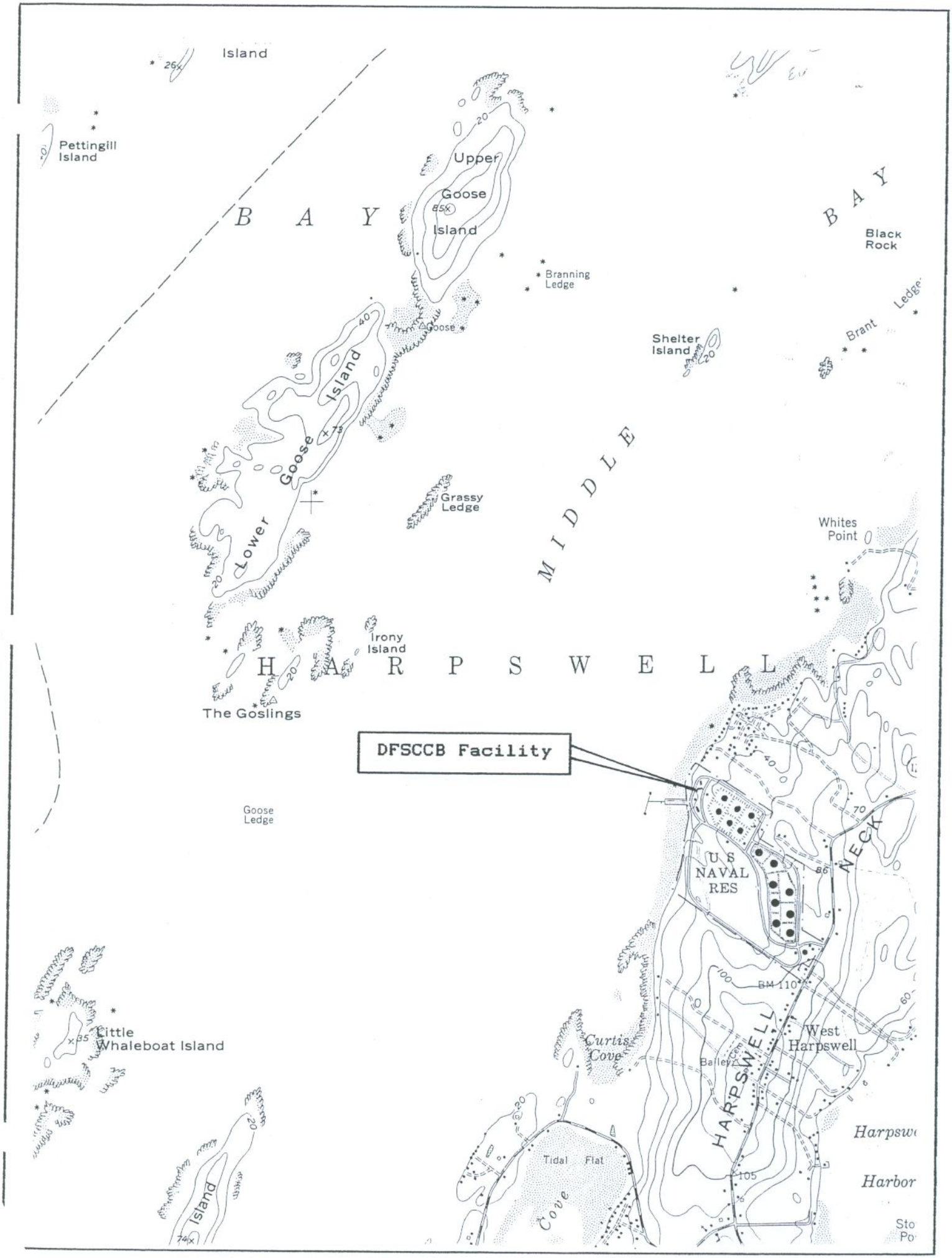
CONCLUSIONS AND RECOMMENDATIONS

A thorough visual inspection of the areas adjacent to the tanks, field instrumentation and laboratory analysis of soil samples taken during closure operations, failed to reveal any product contamination associated with the storage of diesel fuel in two 5,000 gal. underground tanks which had been located near the Generator Building at the DFSCCB Facility (registration# 6452).

PCS therefore sees no need to recommend further assessment or remediation work in conjunction with the closure of tanks 6 & 7 at this facility.

APPENDIX 1

SITE LOCATION MAP


Island
Pettingill Island
B A Y
Upper Goose Island
Branning Ledge
Black Rock
B A Y
Shelter Island
Brant Ledge
Lower Goose Island
Goose
Grassy Ledge
M I D D L E
Whites Point
Irony Island
H A R P S W E L L
The Goslings
DFSCCB Facility
Goose Ledge
U S NAVAL RES
NECK
BM 110
West Harpswell
Curtis Cove
Bailey
HARPSWELL
Little Whaleboat Island
Island
Tidal Flat
Cove
Harpswe
Harbor

APPENDIX 2

SITE PLANS

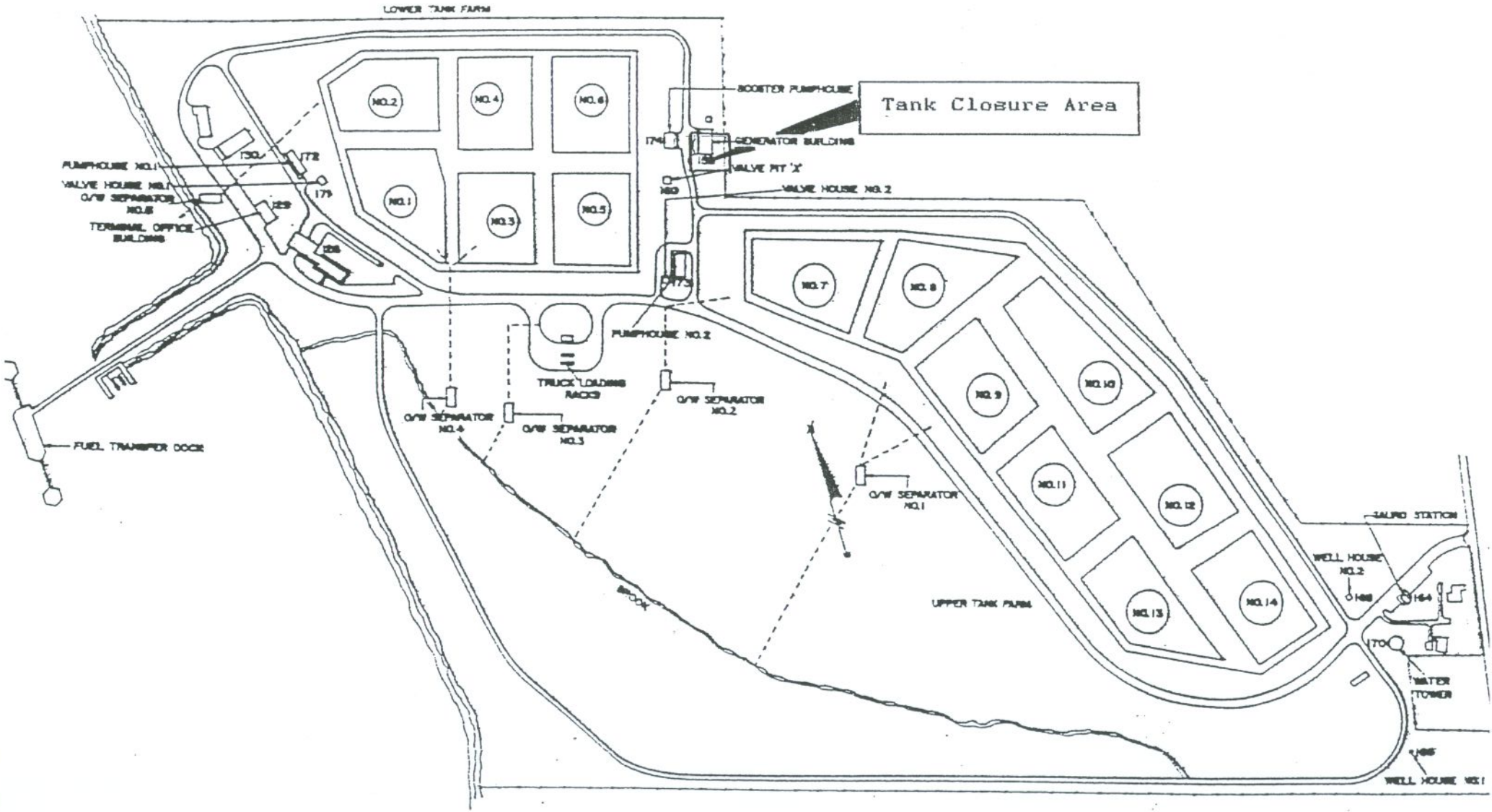
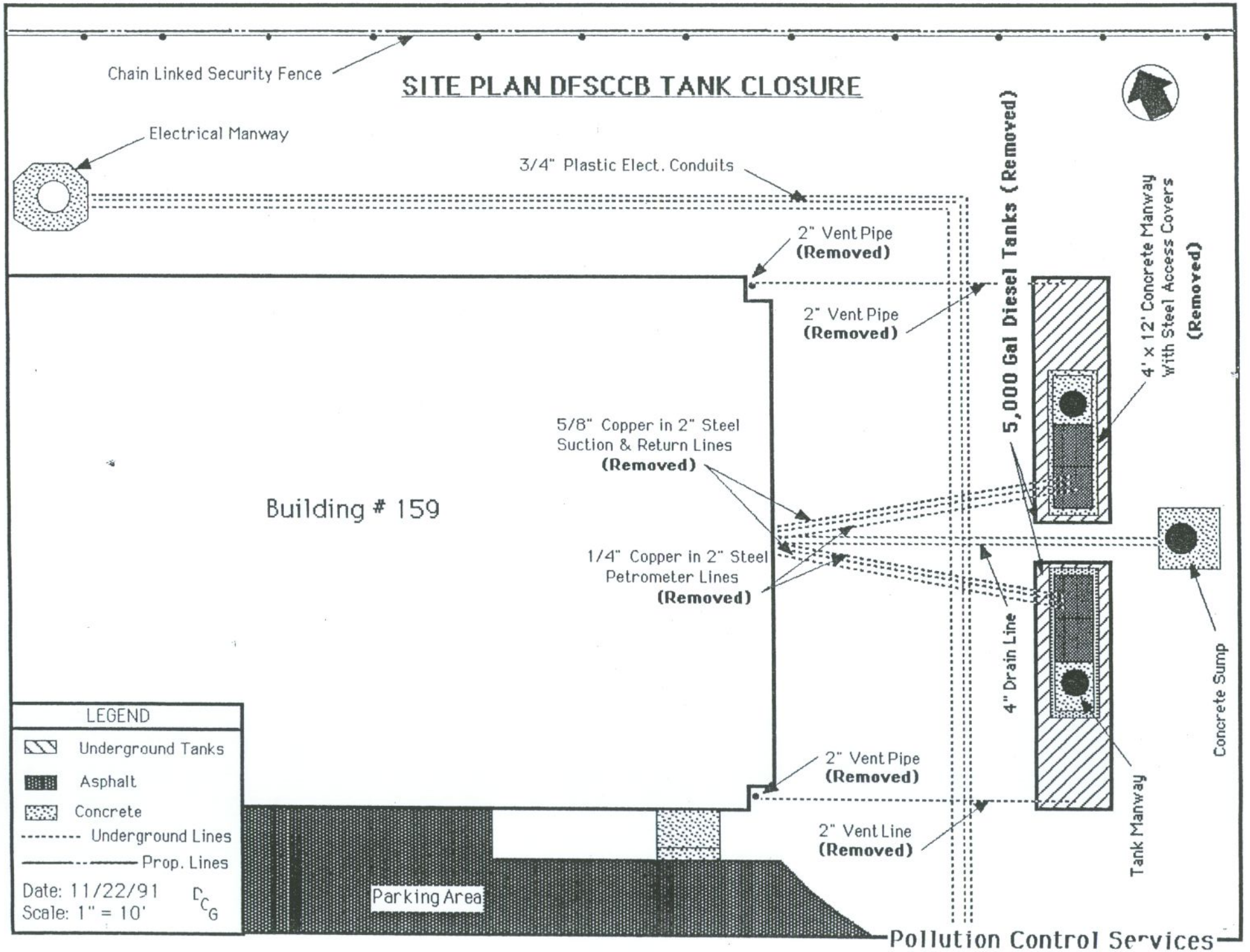


Figure 1 DFSP CASCO BAY, FACILITY LAYOUT


SITE PLAN DFSCCB TANK CLOSURE
Chain Linked Security Fence
Electrical Manway
3/4" Plastic Elect. Conduits
2" Vent Pipe (Removed)
2" Vent Pipe (Removed)
5,000 Gal Diesel Tanks (Removed)
4' x 12' Concrete Manway With Steel Access Covers (Removed)
5/8" Copper in 2" Steel Suction & Return Lines (Removed)
Building # 159
1/4" Copper in 2" Steel Petrometer Lines (Removed)
4" Drain Line
Concrete Sump
Tank Manway
2" Vent Pipe (Removed)
2" Vent Line (Removed)
Parking Area
LEGEND
Underground Tanks
Asphalt
Concrete
Underground Lines
Prop. Lines
Date: 11/22/91
Scale: 1" = 10'
DCG
Pollution Control Services

APPENDIX 3

SOIL SAMPLE ANALYSIS METHODS & RESULTS

PCS 057-91

MAINE ENVIRONMENTAL LABORATORY

198 Main Street Yarmouth, Maine 04096
(207)846-6569 FAX (207) 846-9066

CHAIN OF CUSTODY — ANALYTICAL RECORD

PROJECT MANAGER: Doug Gleason
TELEPHONE:
COMPANY: Pollution Control Services
P.O. NUMBER:
ADDRESS: P.O. Box 187 Main Street, Gorham Me 04038
PROJECT NAME: Defense Fuel Support Point
SAMPLER NAME: Doug Gleason

SAMPLE IDENTIFICATION	# CONTAINERS	TYPE OF CONTAINERS	SAMPLE MATRIX	METHOD PRESERVED	SAMPLING DATE	SAMPLING TIME	TCLP — Metals	TCLP — Volatile Organic Compounds	TCLP — Semi-Volatiles	TCLP — Pesticides ☐ Herbicides ☐	TPH/DEP Diesel
CSS-1	1	G	Soil		11/13/91	16:45					

TURNAROUND REQUEST

✓ Standard

___ Priority (SURCHARGE)

REMARKS

received satisfactory
cool 4°C

	RECEIVED BY:	TIME	DATE
RELINQUISHED BY SAMPLER:		16:45	11/13/91
RELINQUISHED BY:	RECEIVED BY:	TIME	DATE
RELINQUISHED BY:	RECEIVED BY LABORATORY:	TIME 14:40	DATE 11-13-91

MAINE ENVIRONMENTAL LABORATORY

198 Main Street Yarmouth, Maine 04096
(207)846-6569 FAX (207) 846-9066

CHAIN OF CUSTODY — ANALYTICAL RECORD

PROJECT MANAGER: D. Gleason
TELEPHONE:
COMPANY:
P.O. NUMBER:
ADDRESS:
PROJECT NAME: PCS 057-91
SAMPLER NAME: D. Gleason

SAMPLE IDENTIFICATION	# CONTAINERS	TYPE OF CONTAINERS	SAMPLE MATRIX	METHOD PRESERVED	SAMPLING DATE	SAMPLING TIME	TCLP — Metals	TCLP — Volatile Organic Compounds	TCLP — Semi-Volatiles	TCLP — Pesticides ☐ Herbicides ☐	X TPH/DEP Diesel				
CSS-1	1	G	soil	cool 4°c	11/13/91	14:00					X	2	6	6	71

TURNAROUND REQUEST
X Standard
___ Priority (SURCHARGE)

REMARKS
Due asap 11/27/91

RECEIVED BY:		RECEIVED BY:	RECEIVED BY LABORATORY: Diane Dreyer
TIME		TIME	TIME 3:35pm
DATE		DATE	DATE 11/15/91
RELINQUISHED BY SAMPLER:		RELINQUISHED BY:	RELINQUISHED BY:

analytics environmental laboratory inc.

195 Commerce Way
Portsmouth, New Hampshire 03801
603-436-5111

November 22, 1991

Mr. Herb Kodis
Maine Environmental Laboratory
198 Main Street
Yarmouth, ME 04096

Re: **PCS 057-91**

Enclosed are the results of the analyses on your sample(s). Please see individual reports for specific methodologies and references.

If you have any further questions on the analytical methods or these results, do not hesitate to call.

Lab Number	Sample Date	Station Location	Analysis	Remarks
26671	11/13/91	CSS-1	TPH (High Resolution GC)	

Analytics Environmental Laboratory is certified by the states of New Hampshire, Maine, Massachusetts, New Jersey, and Florida. A list of actual certified tests is available upon request.

Authorized signature Kenneth W. Teague

Kenneth W. Teague
Laboratory Director

analytics environmental laboratory inc.

195 Commerce Way
Portsmouth, New Hampshire 03801
603-436-5111

November 22, 1991

Mr. Herb Kodis
Maine Environmental Laboratory
198 Main Street
Yarmouth, ME 04096

Client Project: PCS 057-91
Project Number:
Station ID: CSS-1

Lab #: 26671
Matrix: Soil
Collection Date: 11/13/91
Lab Receipt Date: 11/15/91
Extraction Date: 11/19/91
Analysis Date: 11/21/91

TOTAL PETROLEUM HYDROCARBON ANALYSIS

Sample	Result	Units	Detection Limit	Methodology
26671	ND	mg/kg	5	High Resolution GC

Methodology reference "State of Maine Standard Operating Procedure, Number 4.1.2, Revision 1, June 24, 1991."

ND denotes none detected.

Authorized signature _____
Kenneth W. Teague
Laboratory Director

APPENDIX 4

LABORATORY QA/QC INFORMATION

analytics environmental laboratory inc.

195 Commerce Way
Portsmouth, New Hampshire 03801
603-436-5111

Mr. Herb Kodis
Maine Environmental Laboratory
198 Main Street
Yarmouth, ME 04096

December 4, 1991

Client Project: PCS 057-91
Project Number:
Station ID: Extraction Blank

Lab #: Method Blank
Matrix: Solid
Collection Date:
Lab Receipt Date:
Extraction Date: 11/19/91
Analysis Date: 11/21/91

TOTAL PETROLEUM HYDROCARBON ANALYSIS

Sample	Result	Units	Detection Limit	Methodology
Blank	ND	mg/kg	5	High Resolution GC

Methodology reference "State of Maine Standard Operating Procedure, Number 4.1.2, Revision 1, June 24, 1991."

ND denotes none detected.

Authorized signature Kenneth W. Teague (CK)
Kenneth W. Teague
Laboratory Director

analytics environmental laboratory inc.

195 Commerce Way
Portsmouth, New Hampshire 03801
603-436-5111

TOTAL PETROLEUM HYDROCARBONS
MATRIX SPIKE REPORT

Matrix: Soil
Date: 11/12/91

Spike Compound	Amount added	Amount Recovered	% Recovery
#2 Fuel Oil	5 mg/kg	5 mg/kg	100

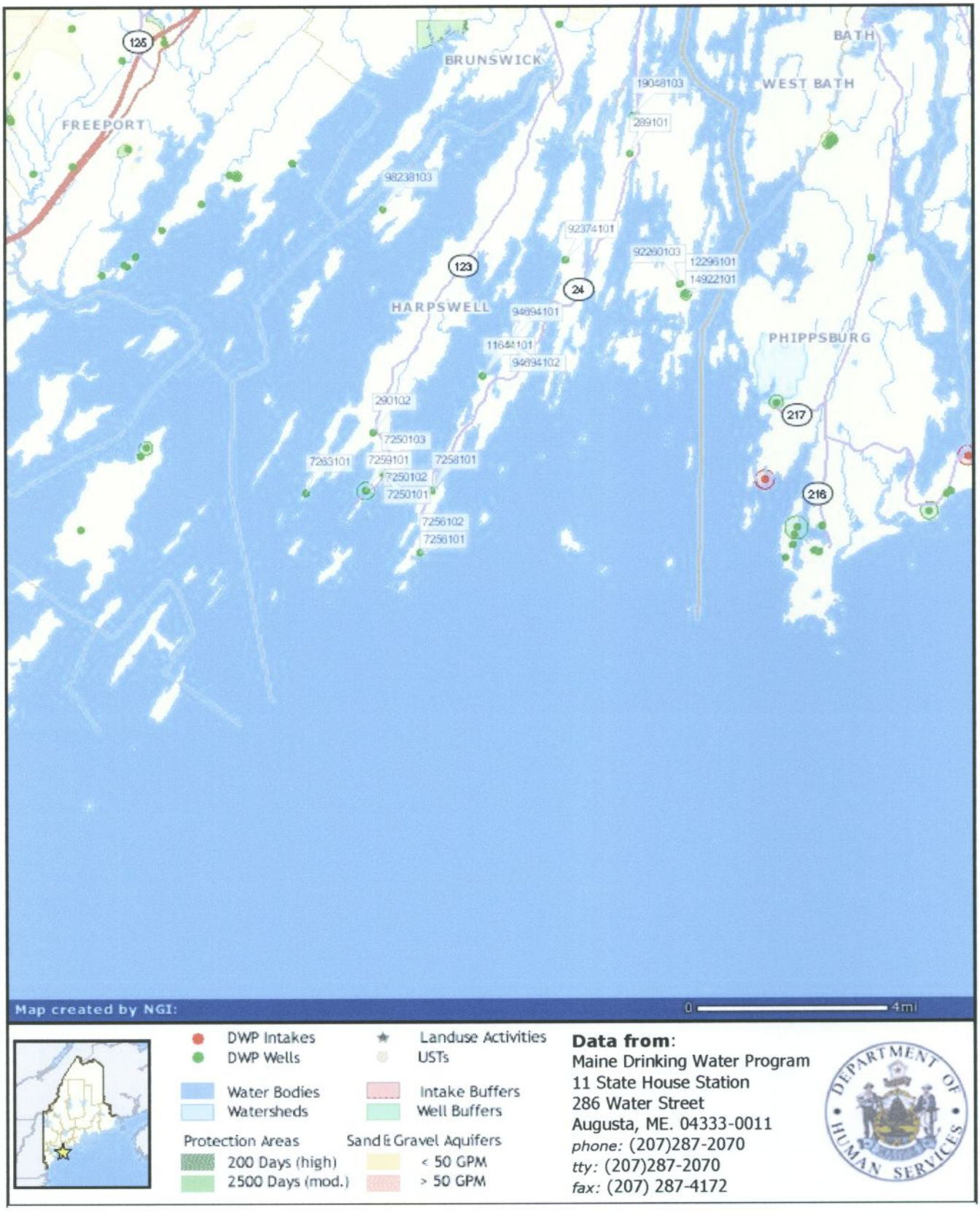
Authorized signature Kenneth W. Teague (KK)

Kenneth W. Teague
Laboratory Director

Methodology reference "State of Maine Standard operating Procedure, Number 4.1.2, Revision 1, June 24,1991."

Appendix D

Maine Drinking Water Program Map



Data from:
Maine Drinking Water Program
11 State House Station
286 Water Street
Augusta, ME. 04333-0011
phone: (207)287-2070
tty: (207)287-2070
fax: (207) 287-4172

Town Report for Public Water Systems on August 03,2006

Information for Harpswell

Maine Geocode: 5110

Number of Water Systems Found in Check

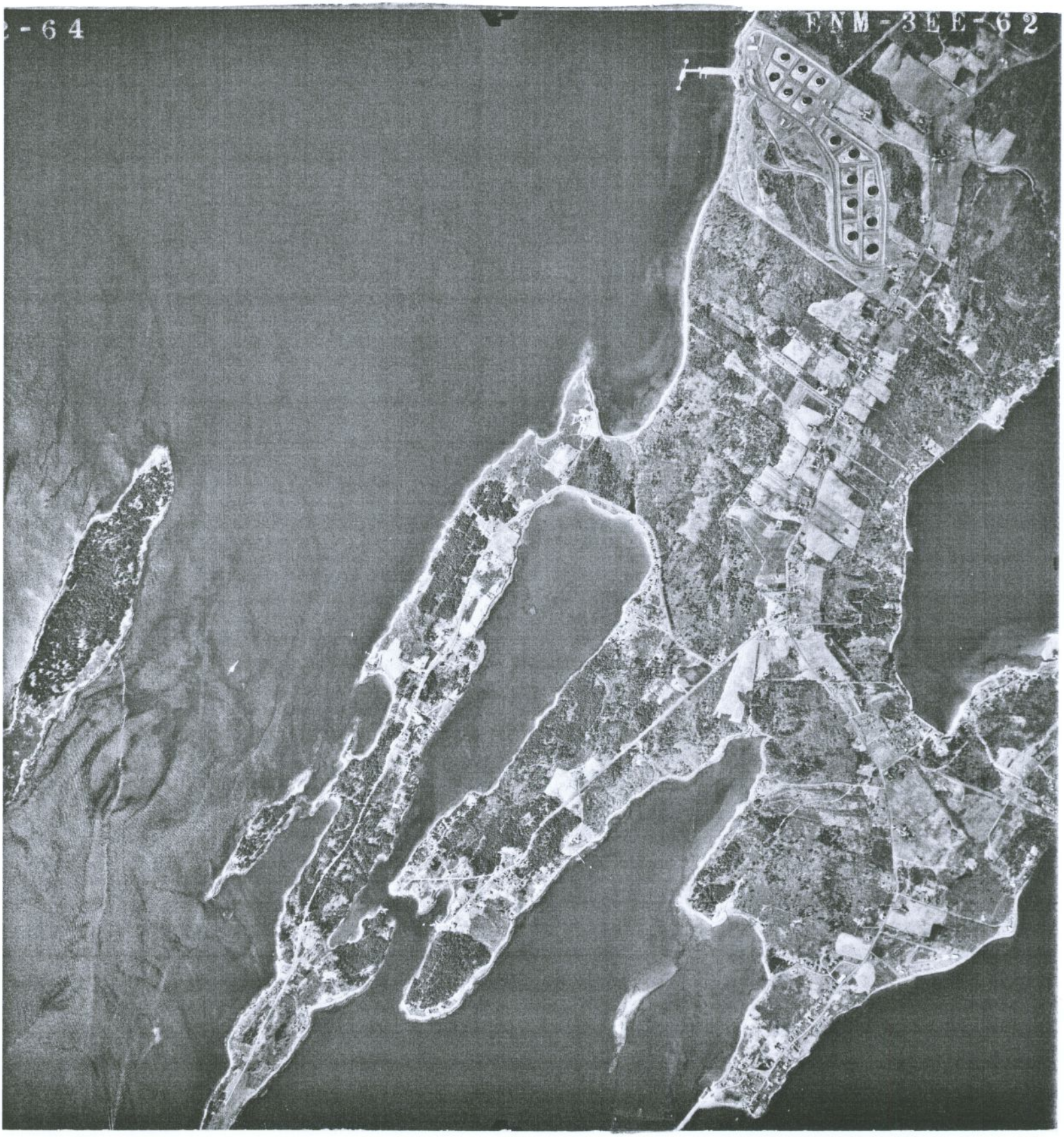
Wells: 19 Intakes: 0

19 Wells Found - Contact Information Listed Below

Well ID	System Name	Address
7250101	AUBURN COLONY DINING HALL	16 AUBURN COLONY RD - HARPSWELL, ME. 04079
7250102	AUBURN COLONY DINING HALL	16 AUBURN COLONY RD - HARPSWELL, ME. 04079
7250103	AUBURN COLONY DINING HALL	16 AUBURN COLONY RD - HARPSWELL, ME. 04079
98238103	BIRCH ISLAND WATER SYSTEM	PO BOX 300 - ATKINSON, NH. 03811
14922101	BLOCK & TACKLE	855 CUNDY'S HARBOR ROAD - HARPSWELL, ME. 04079
7258101	COOKS ISLAND VIEW MOTEL	PO BOX 943 - MERIDEN, CT. 06450
12296101	CUNDYS HBR COMMUNITY HALL	34 LONGLEY DR - HARPSWELL, ME. 04079
94694101	DIPPER COVE ASSOC.	49 DIPPER COVE RD - ORRS ISLAND, ME. 04066
94694102	DIPPER COVE ASSOC.	49 DIPPER COVE RD - ORRS ISLAND, ME. 04066
7263101	DOLPHIN MARINE & RESTAURANT	PO BOX 540 - HARPSWELL, ME. 04079
7256101	DRIFTWOOD INN	PO BOX 16 - BAILEY ISLAND, ME. 04003
7256102	DRIFTWOOD INN	PO BOX 16 - BAILEY ISLAND, ME. 04003
7259101	ESTES LOBSTER HOUSE	1906 HARPSWELL NECK RD. - HARPSWELL, ME. 04079
19048103	GREAT ISLAND LOBSTER BARN	31 DOUGHTY COVE RD - HARPSWELL, ME. 04079
92374101	LOMBOS PENINSULA OWNRS ASC	7 SOUND SIDE RD - HARPSWELL, ME. 04079
92260103	MILLSTONE APARTMENTS	782 CUNDY HARBOR RD - HARPSWELL, ME. 04079
289101	MSAD 75 HARPSWELL ISLAND SCH	50 REPUBLIC AVE - TOPSHAM, ME. 04086
290102	MSAD 75 WEST HARPSWELL SCHOOL	50 REPUBLIC AVE - TOPSHAM, ME. 04086
11644101	ORRS ISLAND CAMPGROUND	44 BOND POINT RD - ORRS ISLAND, ME. 04066

Appendix E

Aerial Photographs



1964

1980

Send To Printer Back To TerraServer Change to 11x17 Print Size Show Grid Lines Change to Landscape

USGS 25 km NE of Portland, Maine, United States 29 Apr 1998

Image courtesy of the U.S. Geological Survey

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Appendix F

Town of Harpswell File Review

WOODARD & CURRAN
Engineering • Science • Operations

CORPORATE OFFICES: Maine, Massachusetts, New Hampshire, Connecticut, Florida
Operational offices throughout the U.S

RECEIVED

January 10, 2006

TOWN OF HARPSWELL

Kristi Eiane, Town Administrator
Town of Harpswell
P.O. Box 39
Harpswell, ME 04079

Re: Fuel Depot General Building Condition Assessment – Harpswell, Maine

Dear Kristi:

Woodard & Curran visited the former Navy Fuel Depot (hereinafter called the "Depot") on December 12, 2005 to observe the condition of the on-site building facilities and the water tower. We appreciate Bill Wells taking the time to meet with us and show us around the facility. We also visited the Town Hall to collect any data available in the community's file that might aid in our evaluation. As it turned out, the file did not include design drawings or specifications for any of the facilities but did include the following items which we requested and received copies of:

- Estimates provided by R.A. Webber & Sons for the removal of the facilities
- Results of asbestos testing by Environmental Management, Inc.
- A letter to Bill Wells from Naji Akladiss with MDEP dated November 12, 2005
- An email to Bill Wells from Bruce Hackett describing estimated costs for cleanup of mercury debris from mercury light lights and ballasts within the buildings.

In many cases, building codes vary depending on the use of the structure so our review of the Depot buildings are intentionally void of reference to specific codes since a future use has not been determined. Instead, we have focused on the general condition of the buildings, any remaining inherent value, and barriers to their continued use. As indicated in the Scope of Work, our tasks did not include any assessment of past or present site remediation and cleanup efforts nor did we comment on the condition of the pier. Both of these items, along with others, have the potential to influence the future use or value of the site and therefore the buildings.

As indicated, original building drawings and specifications were not available so the exact age of the buildings could not be determined. Reportedly, the buildings were constructed in the 1950's so that would make them approximately 55 years old. There are eleven structures on the 118.5 acre site consisting of ten buildings and a water tower. The majority of the buildings are steel framed masonry with brick façade and flat roofs. The water tower is a painted steel tower with suspended steel tank.

Our site walk included external inspections of all the buildings (see Figure 1 – Site Sketch attached) with access to the interior of six of the ten. Building 170, which is associated with the water tower, Building 161, and the two small block buildings were all locked and inaccessible.

Roof Systems

At the time of our inspection, there was snow cover so the exterior condition of roofs could not be verified. Bill Wells indicated he was unaware of any significant maintenance or repair that had taken

place in the recent past and inspection of the underside of the roofs seemed to support that assessment. According to Bill and the Fuel Depot Committee meeting notes, some minor repair of the guard shack roof was completed in 2002 but that is reportedly the only repairs that have occurred since the Town voted to accept the Depot properties in 1997. Visual evidence from the building interiors indicates that most of the roofs have experienced varying degrees of leakage over time.

The design life of most commercial roof systems is 25 years or less. In the event that repairs are initiated, current building codes generally require a structural assessment of the roof framing system prior to making the repairs if more than 25% of the roof will be impacted. Although there was no obvious visual evidence of structural fatigue or failure of the roof framing systems, changes in Building Code since the Depot facility was constructed would normally require structural upgrades. With or without structural upgrades, rust is present on the metal roof deck and depending on the severity this condition would require either replacement or repair. Repair would include sanding, priming and painting with a rust-inhibiting paint system.

Concrete foundations and slabs

Most foundations are concrete with floating concrete slabs. The exception is Building 130 which consists of steel framing with no building skin and a foundation of reinforced concrete with an integral slab. Due to snow cover, it was difficult to see all of the foundations from the exterior but where visible they appeared to be in fair condition with three exceptions.

- In the northwest corner of the guard shack, the floating slab has cracked and dropped from its original elevation as much as 4-inches. The foundation walls seem to be undisturbed but apparently the compaction of the fill within the foundation may not have been adequate and allowed this settlement to occur.

- A similar condition exists in Building 158 with a crack running across the front of the garage with obvious settlement on the westerly side near the doors. In this case, the crack extends up to the roof framing through the concrete masonry unit (CMU) walls.

- The third foundation issue we observed is associated with Building 130. The foundation is deteriorating due to exposure to the corrosive coastal environment attacking the reinforcing steel within the concrete. Reuse of the framing is unlikely due to incompatibility with current building manufacturer systems and the damage caused by long term exposure.

Windows and doors

Windows and doors in the buildings have either been destroyed by vandals or the environment. The exception is the overhead doors in Building 126, Building 158 and Building 159. We observed two types of windows; most aluminum frame double glazed. Other windows are single glazed wood frame. The aluminum frames do not include a thermal break and would therefore not meet energy code requirements even if they were repaired. The windows should be boarded up to secure them from vandals and the broken glass removed for safety reasons.

Electrical/Mechanical Systems

Several of the buildings never had heating systems and in others the mechanical rooms were locked and inaccessible. The design life of a commercial boiler according to the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) would be approximately 30 to 35 years. Assuming all the boilers are original equipment, they are well beyond their design life.

Electrical and plumbing systems have also suffered from vandalism and neglect. Demolition of items related to the fuel depot systems and equipment is recommended to insure the safety of the public. This includes the diesel generators in the generator building which are likely no longer of any value. Reportedly, the engine fluids were drained when they were decommissioned at the direction of the Maine Department of Environmental Protection (MDEP) which would have left them susceptible to condensation and rust.

Lighting has been mostly destroyed and would need to be replaced. The lighting has tested positive for mercury bulbs and ballasts so hazardous material clean-up is required regardless of the use.

Paint and Asbestos

Additional testing should also be completed to evaluate the paint on the buildings. Many Department of Defense facilities of this age were painted with paints that were high in lead content. Asbestos has also been detected in the generator building on the mechanical systems so additional hazardous clean up would be necessary.

An environmental contractor has estimated a range of $1,800 to $2,400 for the clean up.

Water Tower, Control Building & Water Supply

The water tower and Building 170 were not accessible during our visit due to the locked fence around the perimeter but the building is constructed of CMU with a flat roof similar to most of the other buildings on site and it is assumed that it is in similar condition. The water tower, which provided pressure and flows for domestic water supply and fire flows for emergency response, appears to be in good condition. We estimate the tank volume to be approximately 250,000 gallons.

We learned from Bill Wells that the clean up and monitoring efforts have included significant restrictions by the MDEP regarding the volume that can be pumped daily from the well for fear that removal of large volumes of water may cause the migration of contaminates into the bedrock fractures beneath. The maximum daily pump volume is 450 gallons.

Conclusions

In conclusion, some general observations can be made about the ten buildings and the water tower located around the Depot property. The one positive we noted was that the external, structural appearance of the buildings was in many cases good. On the negative side, the buildings are over 50 years old and the have been unheated, un-maintained, and vandalized for more than ten years. Accordingly, most of the internal systems are outdated, unserviceable and in violation of current Building Code. The HVAC, electrical, water supply, plumbing and flooring are in a state of disrepair. Foundations are cracked and spalling in some of the buildings, while they appear in satisfactory condition in others. The presence of lead paint is

probable and certain building components have tested positive for asbestos and mercury. Windows and doors are largely broken or deteriorated and those that are not would need energy efficient replacements. The roofs leak and would likely require complete replacement. A structural analysis will be necessary before they can even be replaced which would probably lead to structural upgrades.

Therefore, given the extent of deterioration, the cost to renovate the buildings from their current state of disrepair would be significant. Roofs alone, assuming moderate structural upgrades, would likely total more than $300,000 in repair costs. Given the current state of the building systems, the roofing cost would likely be only a fraction of the overall rehabilitation costs required to return the buildings to a serviceable condition. By the same token, maintaining the status quo is a liability to the Town, ultimately resulting in future demolition of the buildings with the future cost of demolition continuing to increase as the buildings' value further diminishes.

Some of the buildings could have limited value for uses such as cold storage. Several have overhead doors and are currently in use by the Town for this purpose. To continue this use, clean up of broken glass and securing the openings is necessary to protect the public. Depending on the use, re-roofing may also be necessary to insure a water tight building envelope. Regardless of the direction the Town chooses to pursue with the buildings, clean up of the hazardous materials should occur at the earliest possible time. Quotes have already been received to provide those services and therefore budgeting for the effort will be straightforward.

Analysis of the water tower is unique, as it serves as basic infrastructure and water supply for all the on-site buildings. With a restricted water supply extraction rate of 450 gallons per day, any future facility development would be limited to uses with minimal water demands. Therefore, the water tower with its approximately 250,000 gallons of capacity, could provide some valuable water storage to low demand facilities. Visual inspection would indicate that the tower is in fair condition. However if the ultimate use of the site does not include buildings or water usage, the tower would serve no purpose and should be removed along with the buildings.

If specific uses are identified, we would be happy to investigate the code upgrades further and help establish budgetary costs. In the mean time, we hope this information is helpful in deciding the future of the buildings on the site.

Sincerely,

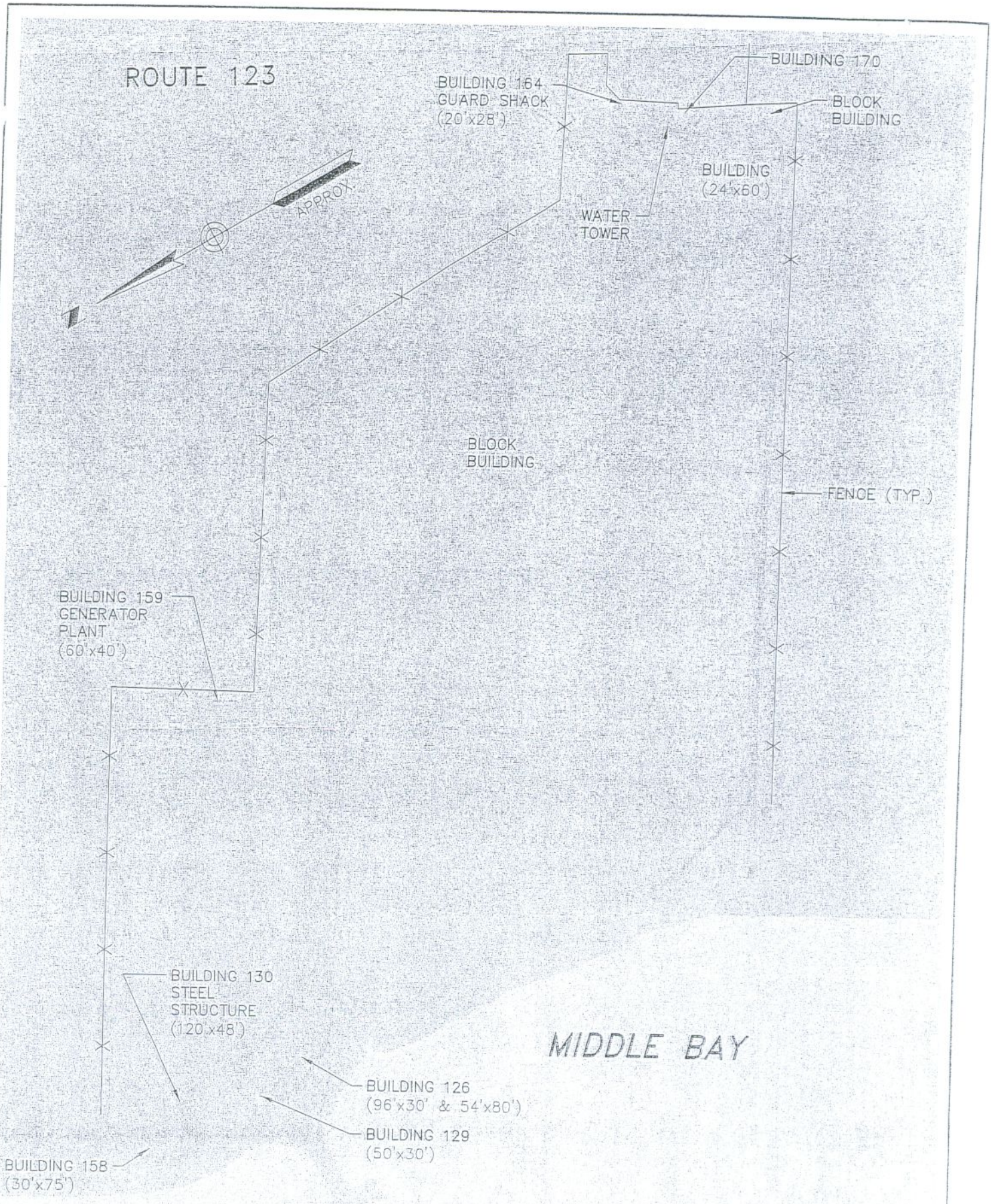
WOODARD & CURRAN INC.

James D. Wilson, P.E.
Project Manager

JDW/jiv
990014.17

Attachment

cc: Randy E. Tome, P.E.



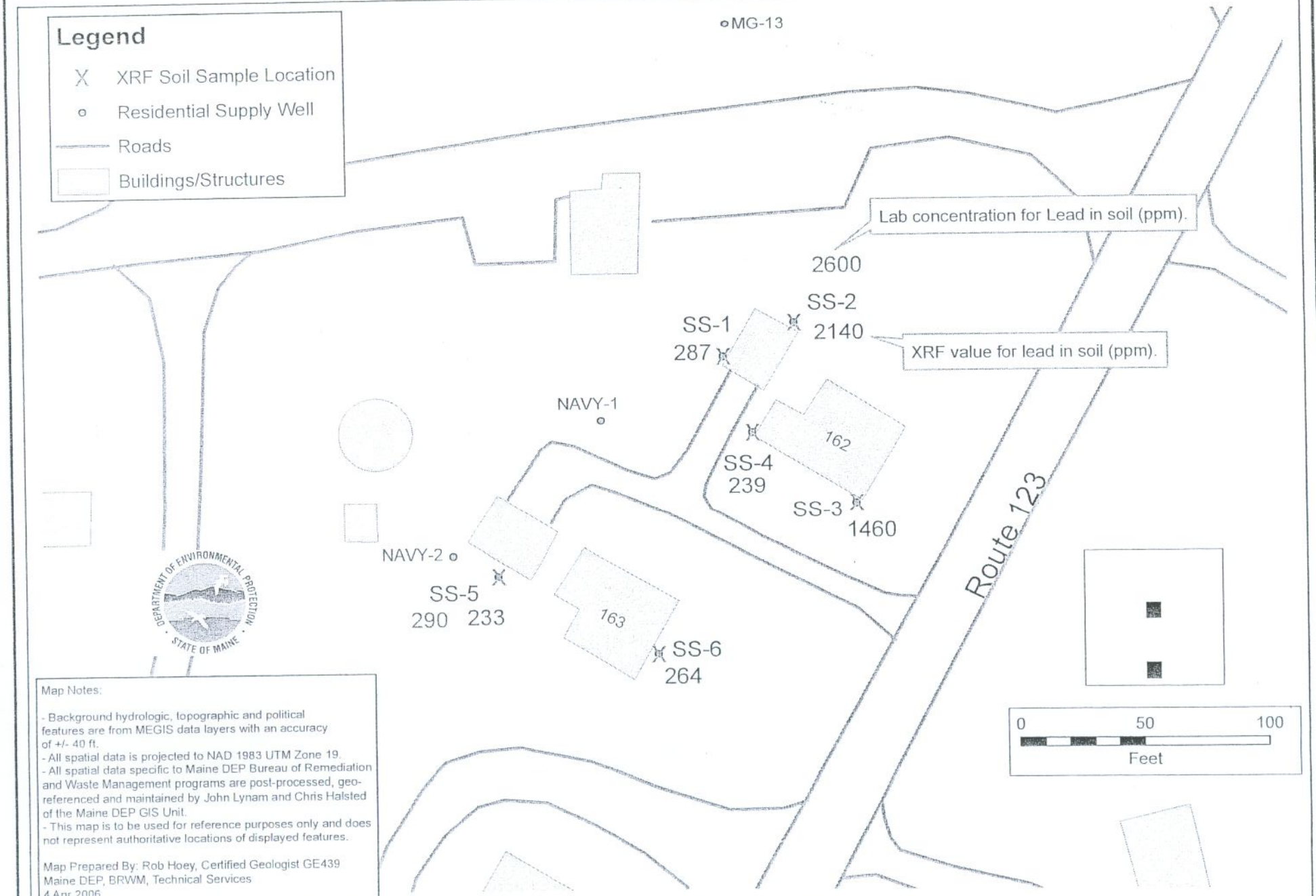
WOODARD & CURRAN

FUEL DEPOT
SITE SKETCH

TOWN OF HARPSWELL, MAINE

JOB NO: 990014.17
DATE: JAN 2006
SCALE: N.T.S.

DFSP Harpswell XRF Sample Locations



Map Notes:

- Background hydrologic, topographic and political features are from MEGIS data layers with an accuracy of +/- 40 ft.
- All spatial data is projected to NAD 1983 UTM Zone 19.
- All spatial data specific to Maine DEP Bureau of Remediation and Waste Management programs are post-processed, geo-referenced and maintained by John Lynam and Chris Halsted of the Maine DEP GIS Unit.
- This map is to be used for reference purposes only and does not represent authoritative locations of displayed features.

Map Prepared By: Rob Hoey, Certified Geologist GE439
Maine DEP, BRWM, Technical Services
4 Apr 2006